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Al Meslmani, B.M.[a], Mahmoud, G.F.[a][b], Leichtweiß, T.[c], Strehlow, B.[a], Sommer, F.O.[d], Lohoff, M.D.[d], Bakowsky, U.[a]
Covalent immobilization of lysozyme onto woven and knitted crimped polyethylene terephthalate grafts to minimize the adhesion of broad spectrum pathogens

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Abstract
Graft-associated infections entirely determine the short-term patency of polyethylene terephthalate PET cardiovascular graft. We attempted to enzymatically inhibit the initial bacterial adhesion to PET grafts using lysozyme. Lysozyme was covalently immobilized onto woven and knitted forms of crimped PET grafts by the end-point method. Our figures of merit revealed lysozyme immobilization yield of 15.7 µg/cm2, as determined by the Bradford assay. The activity of immobilized lysozyme on woven and knitted PET manifested 58.4% and 55.87% using Micrococcus lysodeikticus cells, respectively. Noteworthy, the adhesion of vein catheter-isolated Staphylococcus epidermidis decreased by 6- to 8-folds and of Staphylococcus aureus by 11- to 12-folds, while the Gram-negative Escherichia coli showed only a decrease by 3- to 4-folds. The anti-adhesion efficiency was specific for bacterial cells and no significant effect was observed on adhesion and growth of L929 cells. In conclusion, immobilization of lysozyme onto PET grafts can inhibit the graft-associated infection. © 2015 Elsevier B.V. All rights reserved.

Author Keywords

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Lotfy, H.M.[a][b], Hegazy, M.A.[a], Mowaka, S.[c][d], Mohamed, E.H.[c]
Validated spectrophotometric methods for simultaneous determination of Omeprazole, Tinidazole and Doxycycline in their ternary mixture

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Abstract
A comparative study of smart spectrophotometric techniques for the simultaneous determination of Omeprazole (OMP), Tinidazole (TIN) and Doxycycline (DOX) without prior separation steps is developed. These techniques consist of several consecutive steps utilizing zero/or ratio/or derivative spectra. The proposed techniques adopt nine simple different methods, namely direct spectrophotometry, dual wavelength, first derivative-zero crossing, amplitude factor, spectrum subtraction, ratio subtraction, derivative ratio-zero crossing, constant center, and successive derivative ratio method. The calibration graphs are linear over the concentration range of 1-20 µg/mL, 5-40 µg/mL and 2-30 µg/mL for OMP, TIN and DOX, respectively. These methods are tested by analyzing synthetic mixtures of the above drugs and successfully applied to commercial pharmaceutical preparation. The methods that are validated according to the ICH guidelines, accuracy, precision, and repeatability, were found to be within the acceptable limits. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Amplitude factor; Constant center; Spectrophotometry; Successive derivative ratio; Ternary mixture

Ahmed, N.M.[a] , Mohamed, M.G.[a] , Mabrouk, M.R.[b] , Elshami, A.A.[c]
Novel anticorrosive pigments based on waste material for corrosion protection of reinforced concrete steel
(2015) *Construction and Building Materials*, 98, pp. 388-396.

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Abstract
The performance of concrete specimens containing reinforced rebars coated with films having silica waste and core-shell pigments containing silica as core (80-90%) covered with Zn, Sr, Zn Sr phosphates (10-20%) were compared. Core-shell particles are new trend in anticorrosive pigments comprising core which is cheap material (major) covered with efficient expensive material (minor). The corrosion resistance of rebars was measured using EIS and half cell potential besides measuring the bond strength at the rebar/concrete interface. The results revealed that embedded rebars coated with paints containing the pigments exhibited better efficiency and did not affect the bond strength between rebar and concrete. © 2015 Elsevier Inc. All rights reserved.

Author Keywords
Concrete; Core-shell; Corrosion; Reinforcing steel; Silica fume

Kazem, H.[a] , Bunn, W.G.[b] , Seliem, H.M.[c] , Rizkalla, S.H.[a] , Gleich, H.[b]
Durability and long term behavior of FRP/foam shear transfer mechanism for concrete sandwich panels
(2015) *Construction and Building Materials*, 98, art. no. 7116, pp. 722-734.

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Abstract
This paper presents an experimental program to evaluate the effect of sustained loading and outdoor exposure on the shear strength of precast concrete sandwich panels connected with FRP grid/rigid foam insulation as shear transfer mechanism. CFRP and GFRP grids were considered in this study along with EPS and XPS foam. The experimental program is comprised of three different studies with a total of 26 test panels using different combinations of FRP grid and foam insulation. © 2015 Elsevier Ltd.

Author Keywords
CFRP grid; GFRP grid; Outdoor exposure; Shear strength; Sustained loading; Wall panels

Shaker, M.A.[a] [b] , Younes, H.M.[c]
Photo-irradiation paradigm: Mapping a remarkable facile technique used for advanced drug, gene and cell delivery
(2015) *Journal of Controlled Release*, 217, pp. 10-26.

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Abstract

Undoubtedly, the progression of photo-irradiation technique has provided a smart engineering tool for the state-of-the-art biomaterials that guide the biomedical and therapeutic domains for promoting the modern pharmaceutical industry. Many investigators had exploited such a potential technique to create/ameliorate numerous pharmaceutical carriers. These carriers show promising applications that vary from small drug to therapeutic protein delivery and from gene to living cell encapsulation design. Harmony between the properties of precisely engineered precursors and the formed network structure broadens the investigator's intellect for both brilliant creations and effective applications. As well, controlling photo-curing at the formulation level, through manipulating the absorption of light stimuli, photoinitiator system and photo-responsive precursor, facilitates the exploration of novel distinctive biomaterials. Discussion of utilizing different photo-curing procedures in designing/formulation of different pharmaceutical carriers is the main emphasis of this review. In addition, recent applications of these intelligent techniques in targeted, controlled, and sustained drug delivery with understanding of photo-irradiation concept and mechanism are illustrated. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Biomaterials; Drug delivery; Pharmaceutical carriers; Photo-irradiation

Document Type: Review
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High, C.[a] , Seliem, H.M.[b] , El-Safty, A.[c] , Rizkalla, S.H.[a]
Use of basalt fibers for concrete structures
(2015) *Construction and Building Materials*, 96, pp. 37-46.

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Abstract

This study investigated the use of basalt fiber bars as flexural reinforcement for concrete members and the use of chopped basalt fibers as an additive to enhance the mechanical properties of concrete. The material characteristics and development length of two commercially-available basalt fiber bars were evaluated. Test results indicate that flexural design of concrete members reinforced with basalt fiber bars should ensure compression failure and satisfying the serviceability requirements. ACI 440.1R-06 accurately predicts the flexural capacity of members reinforced with basalt bars, but it significantly underestimates the deflection at service load level. Use of chopped basalt fibers had little effect on the concrete compressive strength; however, significantly enhanced its flexural modulus. © 2015 Elsevier Ltd. All rights reserved.

Author Keywords
Average residual strength; Basalt; Bond; Fiber-reinforced concrete; Fibers; Flexure

Document Type: Article
Source: Scopus

Lotfy, H.M.[a] [b] , Mohamed, D.[c] [d] , Mowaka, S.[c] [e]
A comparative study of smart spectrophotometric methods for simultaneous determination of sitagliptin phosphate and metformin hydrochloride in their binary mixture
(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 149, pp. 441-451.

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Abstract

Simple, specific, accurate and precise spectrophotometric methods were developed and validated for the simultaneous determination of the oral antidiabetic drugs; sitagliptin phosphate (STG) and metformin hydrochloride (MET) in combined pharmaceutical formulations. Three methods were manipulating ratio spectra namely; ratio difference (RD), ratio subtraction (RS) and a novel approach of induced amplitude modulation (IAM) methods. The first two methods were used for determination of STG, while MET was directly determined by measuring its absorbance at λ_{max} 232 nm. However, (IAM) was used for the simultaneous determination of both drugs. Moreover, another three methods were developed based on derivative spectroscopy followed by mathematical manipulation steps namely; amplitude factor (P-factor), amplitude subtraction (AS) and modified amplitude subtraction (MAS). In addition, in this work the novel sample enrichment technique named spectrum addition was adopted. The proposed spectrophotometric methods did not require any preliminary separation step. The accuracy, precision and linearity ranges of the proposed methods were determined. The selectivity of the developed methods was investigated by analyzing laboratory prepared mixtures of the drugs and their combined pharmaceutical formulations. Standard deviation values were less than 1.5 in the assay of raw materials and tablets. The obtained results were statistically compared to that of a reported spectrophotometric method. The statistical comparison showed that there was no significant difference between the proposed methods and the reported one regarding both accuracy and precision. © 2015 Elsevier B.V. All rights reserved.

Author Keywords

Amplitude subtraction method; Induced amplitude modulation method; Metformin hydrochloride; Modified amplitude subtraction method; Sitagliptin phosphate

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Venditti, I.[a] , Hassanein, T.F.[b] , Fratoddi, I.[a] , Fontana, L.[a] , Battocchio, C.[c] , Rinaldi, F.[d] , Carafa, M.[e] , Marianecci, C.[e] , Diociaiuti, M.[f] , Agostinelli, E.[g] , Cametti, C.[h] , Russo, M.V.[a]

Bioconjugation of gold-polymer core-shell nanoparticles with bovine serum amine oxidase for biomedical applications

(2015) *Colloids and Surfaces B: Biointerfaces*, 134, pp. 314-321.

DOI: 10.1016/j.colsurfb.2015.06.052

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Abstract

Core-shell gold nanoparticles [AuNPs], stabilized with a hydrophilic polymer, poly(3-dimethylammonium-1-propyne hydrochloride) [PDMPAHCl], have been used for the immobilization of bovine serum amine oxidase [BSAO]. The functionalized surface of the hybrid nanoparticles is pH responsive, due to the presence of aminic groups that carry out a double role: on one hand they act as ligands for the gold nanoparticle surface, allowing the colloidal stabilization and, on the other hand, they give a hydrophilic characteristic to the whole colloidal suspension. The core-shell nanoparticles [Au@PDMPAHCl] have been characterized by using UV-vis and X-ray photoelectron spectroscopy, DLS, ζ-potential measurements and by FE-TEM microscopy. BSAO enzyme can be loaded by non-covalent immobilization onto Au@PDMPAHCl nanoparticles up to 70% in weight, depending on the pH values of the environmental medium. Activity tests on Au@PDMPAHCl-BSAO bioconjugates confirm an enzymatic activity up to 40%, with respect to the free enzyme activity. Moreover, our results show that loading and enzymatic activity are rather interrelated characteristics and that, under appropriate polymer concentration and pH conditions, a satisfactory compromise can be reached. These results, as a whole, indicate that Au@PDMPAHCl-BSAO bioconjugate systems are promising for future biomedical applications. © 2015 Elsevier B.V.

Author Keywords

BSAO; Core-shell nanoparticles; Gold nanoparticles

Document Type: Article
Source: Scopus

Abd-Elhady, A.A.[a] , Sallam, H.E.D.M.[b]

Crack sensitivity of bolted metallic and polymeric joints

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Abstract

The effect of the presence of crack located at the fastener hole surface of bolted metallic (mild steel) and polymeric (Cross-ply [0/90]$_{4s}$ glass fiber reinforced epoxy composite laminate) joints on their ultimate strength and converting their mode of failure has been studied numerically and experimentally. The present results showed that, the failure mode of bolted metallic joint is more sensitive to the presence of the crack than that of bolted composite joint. The critical crack length at which the bolted metallic joint failure mode changed from bearing failure to tensile failure has been recognized. © 2015 Elsevier Ltd.

Author Keywords
Bolted composite joint; Bolted metallic joint; Crack tip deformation; Failure modes; Stress intensity factors

Document Type: Article
Source: Scopus

Lubbad, M.Y.[b] , Al-Quraishy, S.[a] , Dkhil, M.A.[a c]
Antimalarial and antioxidant activities of Indigofera oblongifolia on Plasmodium chabaudi-induced spleen tissue injury in mice

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Abstract

Malaria is still one of the most common infectious diseases and leads to various public health problems worldwide. Medicinal plants are promising sources for identifying novel agents with potential antimalarial activity. This study aimed to investigate the antimalarial and the antioxidant activities of Indigofera oblongifolia on Plasmodium chabaudi-induced spleen tissue injury in mice. Mice were divided into five groups. The first group served as a vehicle control; the second, third, fourth, and fifth groups were infected with 1×10^6 P. chabaudi-parasitized erythrocytes. Mice of the last three groups were gavaged with 100 µl of I. oblongifolia leave extract (IOLE) at a dose of 100, 200, and 300 mg IOLE/kg, respectively, once daily for 7 days. IOLE was significantly able to lower the percentage of parasitemia. The most effective dose was the 100 mg IOLE/kg, which could reduce the parasitemia from about 38 to 12 %. The infection induced spleen injury. This was evidenced by disorganization of spleen white and red pulps, appearance of hemozoin granules and parasitized erythrocytes. These changes in spleen led to the increased histological score. Also, the infection increased the spleen oxidative damage where the levels of nitrite/nitrate, malondialdehyde, and catalase were significantly altered. All these infection-induced parameters were significantly improved during IOLE treatment. In addition, the mRNA expression of inflammatory cytokines interleukin-1beta, interleukin-6, and tumor necrosis factor-alpha were upregulated after infection with P. chabaudi, whereas IOLE significantly reduced the expression of these genes. Our results indicate that I. oblongifolia leaves extract exhibits a significant antimalarial and antioxidant effects, and protects host spleen tissue from injuries induced by P. chabaudi. © 2015, Springer-Verlag Berlin Heidelberg.

Author Keywords
Indigofera oblongifolia; Malaria; Mice; Oxidative stress; Spleen

Document Type: Article
Source: Scopus

Soliman, M.H.[a] , Mohamed, G.G.[b] , Elgemeie, G.H.[a]
Novel synthesis of 2-imino-2H-chromene-3-carboximide metal complexes: Thermal decomposition, spectral studies and antimicrobial activity evaluation

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Abstract

Abstract: New metal complexes derived from the reaction of Cr(III), Mn(II), Fe(III), Co(II), Ni(II), Cu(II) and Zn(II) chlorides with the 2-imino-2H-chromene-3-carboximide organic ligand (HL) have been synthesized. The resulting complexes have been characterized by elemental analysis (CHN), IR, magnetic susceptibility, mass spectra, 1HNMR, UV–Vis, ESR, thermal analysis (TG, DTG and DTA) and molar conductance measurements. All the complexes are 1:2 and 1:3 electrolytes according to their molar conductivities. The microanalyses and spectroscopic data showed that the metal(II)/(III) ions in these complexes achieved coordination number of six and hence have octahedral geometrical structures. This is attained by bonding to the bidentate ligand via its two amino nitrogen atoms and two imine nitrogen atoms, and two monodentate aquo groups via its oxygen atoms. The results showed that the ligand acts as neutral bidentate coordinating via amino and NH nitrogens without displacement of hydrogen. The antimicrobial activities of the chromene ligand and its complexes have been tested against a number of pathogenic bacteria and fungi to assess their inhibiting potential. Antimicrobial studies indicate that these complexes exhibit better activity than the chromene ligand. Graphical abstract: [Figure not available: see fulltext.] © 2015 Akadémiai Kiadó, Budapest, Hungary

Author Keywords

Antimicrobial activity; Coumarin; IR; Mass spectra; Metal complexes; Thermal analysis

Galal, T.M., Farahat, E.A., El-Midany, M.M., Hassan, L.M.
Nutrients and heavy metals accumulation by the giant milkweed Calotropis procera (Aiton) W.T. Aiton in urbanized areas, Egypt

Botany and Microbiology Department, Faculty of Science, Helwan University, Cairo, Egypt

Abstract

The present study was conducted to evaluate the accumulation potential of Calotropis procera for nutrients and heavy metals and its impact on the forage quality of such medicinal plant. Three plant individuals of C. procera as well as three composite soil samples, collected from four urban habitats (residential areas, road sides, railways, and fallow lands) were analyzed for nutrients and heavy metals. It was indicated that all soil heavy metals, except Cd and Pb in railways, were in the safe range. The plant leaves from residential areas contributed to the highest concentrations of total N, P, Na, and Mg, in addition to ash content, crude protein, and crude fibers, while those from railway habitat had the highest values of digestible, metabolized, net, and gross energy. On the average, all investigated metals had bioaccumulation factor (BF) more than unity with the highest value recorded for Cd. Moreover, the order of uptake capability of heavy metal was in the order Cd > Fe > Mn > Zn > Cu > Pb. C. procera had a good forage quality, but it could not be used as animal forage in polluted areas, since it can accumulate high concentrations of heavy metals in toxic levels. The high BF of this species to Mn and its significant positive correlation with its soil content renders this species suitable as a good bioindicator and biomonitor for this heavy metal. © 2015 Accademia Nazionale dei Lincei

Author Keywords

Bioaccumulation; Heavy metals; Nutrients; Nutritive value; Urban habitats

Hashem, F.M., Nasr, M., Fathy, G., Ismail, A.
Formulation and In Vitro and In Vivo Evaluation of Lipid-Based Terbutaline Sulphate Bi-layer Tablets for Once-Daily Administration

Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Helwan University, Cairo, Egypt

Abstract

The objective of this study was to prepare and evaluate terbutaline sulphate (TBS) bi-layer tablets for once-daily administration. The bi-layer tablets consisted of an immediate-release layer and a sustained-release layer containing 5 and 10 mg TBS, respectively. The sustained-release layer was developed by using Compritol®888 ATO, Precirol® ATO 5, stearic acid, and tristearin, separately, as slowly eroding lipid matrices. A full 4×22 factorial design was employed for optimization of the sustained-release layer and to explore the effect of lipid type (X_1), drug–

lipid ratio (X_2), and filler type (X_3) on the percentage drug released at 8, 12, and 24 h (Y_1, Y_2, and Y_3) as dependent variables. Sixteen TBS sustained-release matrices (F1–F16) were prepared by melt solid dispersion method. None of the prepared matrices achieved the targeted release profile. However, F2 that showed a relatively promising drug release was subjected to trial and error optimization for the filler composition to develop two optimized matrices (F17 and F18). F18 which consisted of drug–Compritol®888 ATO at ratio (1:6 w/w) and Avicel PH 101/dibasic calcium phosphate mixture of 2:1 (w/w) was selected as sustained-release layer. TBS bi-layer tablets were evaluated for their physical properties, in vitro drug release, effect of storage on drug content, and in vivo performance in rabbits. The bi-layer tablets showed acceptable physical properties and release characteristics. In vivo absorption in rabbits revealed initial high TBS plasma levels followed by sustained levels over 24 h compared to immediate-release tablets. © 2015 American Association of Pharmaceutical Scientists

Document Type: Article in Press
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Khachatryan, V.[a hz], Sirunyan, A.M.[a], Tumasyan, A.[a], Adam, W.[b], Asilar, E.[b], Bergauer, T.[b], Brandstetter, J.[b], Brondolin, E.[b], Dragicevic, M.[b], Erö, J.[b], Flechl, M.[b], Friedl, M.[b], Frühwirth, R.[b gg], Ghete, V.M.[b], Hartl, C.[b], Hörmann, N.[b], Hrubec, J.[b], Jeitler, M.[b gg], Knünz, V.[b], König, A.[b], Krammer, M.[b gg], Krätschmer, I.[b], Liko, D.[b], Matsushita, T.[b], Mikulec, I.[b], Rabady, D.[b dt], Rahbaran, B.[b], Rohringer, H.[b], Schieck, J.[b gg], Schöfbeck, R.[b], Strauss, J.[b], Treberer-Treberspurg, W.[b], Waltenberger, W.[b], Wulz, C.-E.[b gg], Mossolov, V.[c], Shumeiko, N.[c], Suarez Gonzalez, J.[c], Alderweireldt, S.[d], Cornelis, T.[d], De Wolf, E.A.[d], Janssen, X.[d], Knutsson, A.[d], Lauwers, J.[d], Luyckx, S.[d], Ochesanu, S.[d], Rougny, R.[d], Van De Klundert, M.[d], Van Haevermaet, H.[d], Van Mechelen, P.[d], Van Remortel, N.[d], Van Spilbeeck, A.[d], Abu Zeid, S.[e], Blekman, F.[e], D'Hondt, J.[e], Daci, N.[e], De Bruyn, I.[e], Deroover, K.[e], Heracleous, N.[e], Keaveney, J.[e], Lowette, S.[e], Moreels, L.[e], Olbrechts, A.[e], Python, Q.[e], Strom, D.[e], Tavernier, S.[e], Van Doninck, W.[e], Van Mulders, P.[e], Van Onsem, G.P.[e], Van Parijs, I.[e], Barria, P.[f], Caillol, C.[f], Clerbaux, B.[f], De Lentdecker, G.[f], Delannoy, H.[f], Dobur, D.[f], Fasanella, G.[f], Favart, L.[f], Gay, A.P.R.[f], Grebenyuk, A.[f], Léonard, A.[f], Mohammadi, A.[f], Perniè, L.[f], Randle-conde, A.[f], Reis, T.[f], Seva, T.[f], Thomas, L.[f], Vander Velde, C.[f], Vanlaer, P.[f], Wang, J.[f], Zenoni, F.[f], Beernaert, K.[g], Benucci, L.[g], Cimmino, A.[g], Crucy, S.[g], Fagot, A.[g], Garcia, G.[g], Gul, M.[g], Mccartin, J.[g], Ocampo Rios, A.A.[g], Poyraz, D.[g], Ryckbosch, D.[g], Salva Diblen, S.[g], Sigamani, M.[g], Strobbe, N.[g], Tytgat, M.[g], Van Driessche, W.[g], Yazgan, E.[g], Zaganidis, N.[g], Basegmez, S.[h], Beluffi, C.[h ae], Bondu, O.[h], Bruno, G.[h], Castello, R.[h], Caudron, A.[h], Ceard, L.[h], Da Silveira, 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Abstract

Results are reported on a search for decays of a pseudoscalar A boson into a Z boson and a light scalar h boson, where the Z boson decays into a pair of oppositely-charged electrons or muons, and the h boson decays into bb- The search is based on data from proton-proton collisions at a center-of-mass energy s=8 TeV collected with the CMS detector, corresponding to an integrated luminosity of 19.7 fb-1. The h boson is assumed to be the standard model-like Higgs boson with a mass of 125 GeV. With no evidence for signal, upper limits are obtained on the product of the

production cross section and the branching fraction of the A boson in the Zh channel. Results are also interpreted in the context of two Higgs doublet models. © 2015.

Author Keywords
2HDM; BSM; CMS; Higgs; MSSM

Document Type: Article
Source: Scopus

Shaltout, K.H.[a] , Galal, T.M.[b] , El-Komi, T.M.[a]
Phenology, biomass and nutrients of Imperata cylindrica and Desmostachya bipinnata along the water courses in Nile Delta, Egypt
(2015) *Rendiconti Lincei*, 14 p. Article in Press.

DOI: 10.1007/s12210-015-0459-5

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Abstract
Pollution with heavy metals is a major environmental problem, and plants that accumulate these metals might provide efficient and ecologically sound approaches for their removal. Therefore, the present study was conducted to investigate the phenological behavior and the potential to accumulate nutrients and heavy metals in the aboveground phytomass of two perennial grasses (Imperata cylindrica and Desmostachya bipinnata) along the watercourses in Nile Delta, Egypt. Twenty-five quadrats were selected seasonally, to represent the growth of the two grasses, along canals and drains of the Nile Delta. The phenological behavior of the studied species showed similar seasonal trends along the canals and drains. The average annual biomass of the living and dead parts of D. bipinnata (1901.3 g m−2) was higher than that of I. cylindrica (1626.4 g m−2). D. bipinnata accumulated higher concentrations of Na, and K (14.3, 26.2 mg g−1), while lower Ca, Mg, N, P and Fe (14.2, 11.4, 10.8, 0.3 and 1.4 mg g−1) than I. cylindrica (12.8, 24.8, 14.4, 14.7, 11.6, 0.4 and 2.0 mg g−1). The living parts of I. cylindrica accumulated the highest contents of carbohydrates and proteins during autumn and spring, respectively, while those of D. bipinnata had the highest ash content, but the lowest lipids during summer. D. bipinnata accumulated higher concentrations of Cu and Mn, but lower of Zn and Pb, than I. cylindrica in their living and dead parts. Heavy metals, except Zn, had BF more than unity, however, the uptake capability was in the order: Pb > Mn > Cu > Zn for I. cylindrica, while Pb > Cu > Mn > Zn for D. bipinnata. The analysis of the nutritive values for the two studied grasses evaluated them as poor forage. Finally, the high bioaccumulation factors of both species for Mn, Cu and Pb, in addition to their ability to accumulate the highest concentrations of macro- and micronutrient in the dead parts, render these species a powerful phytoremediator for the removal of these metals from contaminated ecosystems. © 2015 Accademia Nazionale dei Lincei

Author Keywords
Bioaccumulation; Heavy metals; Nutrients; Nutritive value; Phenology

Document Type: Article in Press
Source: Scopus

Yousef, A.[a b] , Brooks, R.M.[c] , El-Halwany, M.M.[d] , Barakat, N.A.M.[b] , EL-Newehy, M.H.[e] , Kim, H.Y.[b]
Cu<inf>0</inf>-decorated, carbon-doped rutile TiO<inf>2</inf> nanofibers via one step electrospinning: Effective photocatalyst for azo dyes degradation under solar light
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Abstract
In this study, zero valent copper nanoparticles (Cu<inf>0</inf> NPs)-decorated, carbon-doped titania nanofibers were successfully prepared by electrospinning of a solution composed of titanium isopropoxide (TIP), polyvinylpyrroliodine (PVP), and copper(II) acetate tetrahydrate. The calcination of the formed nanofiber mats in Ar atmosphere at 850°C

led to produce good morphology nanofibers. The produced powder was characterized by X-ray diffraction (XRD), high resolution transmission electron microscopy (HR-TEM), and field-emission scanning electron microscopy (FESEM). Characterization techniques indicated that the obtained material is Cu^0 NPs-decorated, carbon-doped TiO_2 nanofibers. The synthesized nanofibers were used as photocatalyst for the effective degradation of reactive black 5 (RB5) and methyl red (MR) azo dyes in aqueous solution. The introduced nanofibers showed good photodegradation activity under sunlight. Overall, introduced nanofibers revealed a better photocatalytic activity when compared to pristine TiO_2 nanofibers. The better performance was due to the removal of RB5 and MR at 83% and 65%, respectively. This study opens a new avenue to produce transition metal-decorated, carbon-doped titania nanofibers in a single production step for the use in different catalytic reactions. © 2015 Elsevier B.V.

Author Keywords
Azo dyes; Copper nanoparticles; Electrospinning; Titania carbon nanofibers

Emam, H.E.[a] , El-Rafie, M.H.[a] , Ahmed, H.B.[b] , Zahran, M.K.[b]
Room temperature synthesis of metallic nanosilver using acacia to impart durable biocidal effect on cotton fabrics

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Abstract
Effective one-pot and large scale strategy for rapid synthesis and stabilization of Ag0 nanoparticles (AgNPs) at room temperature, using acacia gum has been reported. Acacia gum played a dual rule as reducing agent for Ag+ and as stabilizing agent for the net produced AgNPs. Concentration of reducing sugars produced in the reaction medium was monitored. Formation of AgNPs has been detected by UV-Vis spectra and confirmed by transmission electron microscopy. Size distribution was 4–8 nm and mean size was 6 nm for AgNPs prepared at room temperature. Finishing of Cotton fabrics by solutions of AgNPs - acacia composite was utilized. Presence of Ag on the coated Cotton was confirmed by using energy dispersive X-ray spectroscopy. The influence of coating with that composite on color of fabrics and on biocidal properties as well as laundering durability of obtained effects was studied. Coated Cotton fabrics exhibited excellent antibacterial action with good durability as after 20 washing cycles, 99 % of bacteria was completely killed. The presented method contains neither complicated systems nor hazard chemicals, which makes the coated fabrics with AgNPs - acacia composite sterile and can be used in medical purposes to prevent or minimize infection with pathogenic bacteria. © 2015, The Korean Fiber Society and Springer Science+Business Media Dordrecht.

Author Keywords
AgNPs; Biocidal properties; Color coordinates; Particle size; Reducing sugars; Silver content

Elbaz, A.M.[a b] , Zayed, M.F.[c] , Samy, M.[d] , Roberts, W.L.[a] , Mansour, M.S.[c e]
The flow field structure of highly stabilized partially premixed flames in a concentric flow conical nozzle burner with coflow

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Abstract
The stability limits, the stabilization mechanism, and the flow field structure of highly stabilized partially premixed methane flames in a concentric flow conical nozzle burner with air co-flow have been investigated and presented in this work. The stability map of partial premixed flames illustrates that the flames are stable between two extinction limits. A low extinction limit when partial premixed flames approach non-premixed flame conditions, and a high

extinction limit, with the partial premixed flames approach fully premixed flame conditions. These two limits showed that the most stable flame conditions are achieved at a certain degree of partial premixed. The stability is improved by adding air co-flow. As the air co-flow velocity increases the most stable flames are those that approach fully premixed. The turbulent flow field of three flames at 0, 5, 10. m/s co-flow velocity are investigated using Stereo Particle Image Velocimetry (SPIV) in order to explore the improvement of the flame stability due to the use of air co-flow. The three flames are all at a jet equivalence ratio (Φ_j) of 2, fixed level of partial premixing and jet Reynolds number (Re_j) of 10,000. The use of co-flow results in the formation of two vortices at the cone exit. These vortices act like stabilization anchors for the flames to the nozzle tip. With these vortices in the flow field, the reaction zone shifts toward the reduced turbulence intensity at the nozzle rim of the cone. Interesting information about the structure of the flow field with and without co-flow are identified and reported in this work. © 2015 Elsevier Inc.

Author Keywords
Combustion; Flames; Flow field; Partially premixed; Stability

Shaker, D.S.[a b], Shaker, M.A.[a], Hanafy, M.S.[a]
Cellular uptake, cytotoxicity and in-vivo evaluation of Tamoxifen citrate loaded niosomes

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Abstract
One of the main challenges in Tamoxifen cancer therapy is achieving localized, efficient and sustained delivery without harming normal healthy organs. This study focused on evaluating Tamoxifen Citrate (TMC) niosomes for localized cancer therapy through in-vitro breast cancer cytotoxicity as well as in-vivo solid anti-tumor efficacy. Different niosomal formulae were prepared by film hydration technique and characterized for entrapment efficiency% (E. E), vesicle size, morphology, and in-vitro release. The cellular uptake and anti-cancer activity were also tested in-vitro using MCF-7 breast cancer cell line. Moreover, in-vivo anti-tumor efficacy was examined in Ehrlich carcinoma mice model through reporting solid tumor volume regression and tissue TMC distribution. The obtained niosomes prepared with Span 60: cholesterol (1: 1 molar ratio) showed a distinct nano-spherical shape with EE up to 92.3% ± 2.3. Remarkably prolonged release of TMC following diffusion release behavior was detected. The optimized formula showed significantly enhanced cellular uptake (2.8 fold) and exhibited significantly greater cytotoxic activity with MCF-7 breast cancer cell line. In-vivo experiment showed enhanced tumor volume reduction of niosomal TMC when compared to free TMC. Based on these results, the prepared niosomes demonstrated to be promising as a nano-size delivery vehicle for localized and sustained TMC cancer therapy. © 2015, Elsevier B.V. All rights reserved.

Author Keywords
Cancer; Cellular uptake; Cytotoxicity; MCF-7; Niosomes; Tamoxifen

Saeed, H.[a b], Qiu, W.[a], Li, C.[a], Flyvbjerg, A.[c], Abdallah, B.M.[a d], Kassem, M.[a e]
Telomerase activity promotes osteoblast differentiation by modulating IGF-signaling pathway

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Abstract
The contribution of deficient telomerase activity to age-related decline in osteoblast functions and bone formation is poorly studied. We have previously demonstrated that telomerase over-expression led to enhanced osteoblast differentiation of human bone marrow skeletal (stromal) stem cells (hMSC) in vitro and in vivo. Here, we investigated

the signaling pathways underlying the regulatory functions of telomerase in osteoblastic cells. Comparative microarray analysis and Western blot analysis of telomerase-over expressing hMSC (hMSC-TERT) versus primary hMSC revealed significant up-regulation of several components of insulin-like growth factor (IGF) signaling. Specifically, a significant increase in IGF-induced AKT phosphorylation and alkaline phosphatase (ALP) activity were observed in hMSC-TERT. Enhanced ALP activity was reduced in presence of IGF1 receptor inhibitor: picropodophyllin. In addition, telomerase deficiency caused significant reduction in IGF signaling proteins in osteoblastic cells cultured from telomerase deficient mice (Terc−/−). The low bone mass exhibited by Terc−/− mice was associated with significant reduction in serum levels of IGF1 and IGFBP3 as well as reduced skeletal mRNA expression of lgf1, lgf2, lgf2r,lgfbp5 and lgfbp6. IGF1-induced osteoblast differentiation was also impaired in Terc−/− MSC. In conclusion, our data demonstrate that impaired IGF/AKT signaling contributes to the observed decreased bone mass and bone formation exhibited by telomerase deficient osteoblastic cells. © 2015 The Author(s)

Author Keywords
Aging; Bone; Bone marrow stromal stem cells; IGF; Osteoblasts; Telomerase

Khedr, M.A.
Stepwise design, synthesis, and in vitro antifungal screening of (Z)-substituted-propenoic acid derivatives with potent broad-spectrum antifungal activity
(2015) *Drug Design, Development and Therapy*, 9, pp. 4501-4513.

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Abstract
Fungal infections are a main reason for the high mortality rate worldwide. It is a challenge to design selective antifungal agents with broad-spectrum activity. Lanosterol 14α-demethylase is an attractive target in the design of antifungal agents. Seven compounds were selected from a number of designed compounds using a rational docking study. These compounds were synthesized and evaluated for their antifungal activity. In silico study results showed the high binding affinity to lanosterol 14α-demethylase (-24.49 and -25.83 kcal/mol) for compounds V and VII, respectively; these values were greater than those for miconazole (-18.19 kcal/mol) and fluconazole (-16.08 kcal/mol). Compound V emerged as the most potent antifungal agent among all compounds with a half maximal inhibitory concentration of 7.01, 7.59, 7.25, 31.6, and 41.6 µg/mL against Candida albicans, Candida parapsilosis, Aspergillus niger, Trichophyton rubrum, and Trichophyton mentagrophytes, respectively. The antifungal activity for most of the synthesized compounds was more potent than that of miconazole and fluconazole. © 2015 Khedr.

Author Keywords
Broad antifungal; Design; Molecular modeling

Hamdy, M.[a][b] , Sirén, K.[c]
A multi-aid optimization scheme for large-scale investigation of cost-optimality and energy performance of buildings
(2015) *Journal of Building Performance Simulation*, 20 p. Article in Press.

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Abstract
According to the European Energy Performance of Buildings Directive (EPBD-2010/31/EU), all EU-Member states are obliged to continuously apply analysis on cost-optimal levels of minimum energy performance requirements towards nearly/net zero energy buildings. To perform such techno-economic analysis, a large number of technical/financial assumptions should be covered and possibly billions of design/operation options should be explored. This is computationally expensive. This study introduces a novel multi-aid optimization scheme (MAOS) for supporting robust cost-optimal decisions on energy-performance levels of buildings. The scheme's feature is reduction of the computational cost by avoiding time-consuming simulations through the use of post-processing and/or simplified models (when possible), while holistic optimization is adopted for considering multivariate interactions between possible design/operation options and financial/technical assumptions. The effectiveness of MAOS is demonstrated by optimizing a single-family house under 108-financial scenarios, where more than 1.610 solutions would be

possible. The results show significant (~95%) time reduction compared with those of the usual simulation-based optimization approach. © 2015 International Building Performance Simulation Association (IBPSA).

Author Keywords
buildings; cost-optimality; energy; EPBD-recast 2010; holistic optimization; integrated analysis; uncertainty

Elsayed, A.[a] , Li, W.[b] , El Kady, O.A.[a] , Daoush, W.M.[c] , Olevsky, E.A.[b] , German, R.M.[b]
Experimental investigations on the synthesis of W-Cu nanocomposite through spark plasma sintering

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Abstract
Elemental powders of nanosized tungsten and chemically deposited nanosized copper were used for preparing tungsten/copper composites, which are used as electric contact components. A composite of 70 wt.%W/30 wt.%Cu (52 vol%W/48 vol%Cu) composition was prepared by three powder metallurgy techniques. Elemental mixing, mechanical milling and electroless Cu coating on tungsten particles were used for the synthesis. The obtained powder blends underwent consolidation by rapid hot pressing using the spark plasma sintering (SPS) route at 950 °C under vacuum and by conventional vacuum pressureless sintering for comparison. The elemental powders and the sintered composites were investigated by optical microscopy and SEM. Electrical conductivity, hardness, transverse rupture strength, and wear properties were measured. Results show that the synthesis of the composite by the investigated route yields good performance. Samples prepared by SPS have shown better mechanical properties than those prepared by compaction and sintering due to their fine microstructure. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Mechanical properties; Physical properties; Powder fabrication; Spark plasma sintering; W-Cu nanocomposites

Funk, P.A.[a] , Elsayed, K.[b] , Yeater, K.M.[c] , Holt, G.A.[d] , Whitelock, D.P.[a]
Could cyclone performance improve with reduced inlet velocity?

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Abstract
Emission abatement cyclone performance is improved by increasing collection effectiveness or decreasing energy consumption. The object of this study was to quantify the pressure drop and fine particulate ($PM_{2.5}$) collection of 1D3D cyclones (H=4Dc, h=1Dc) at inlet velocities from 8 to 18ms-1 (Stk=0.7-1.5) using heterogeneous particulate as a test material at inlet concentrations from 3 to 75gm-3. Cyclone exhaust was passed through filters. Laser diffraction particle size distribution analysis was used to estimate $PM_{2.5}$ emissions. Response surface models showed a strong correlation between cyclone pressure loss (Euler number) and inlet velocity and predicted a 46% reduction in pressure loss for a 25% reduction in inlet velocity (Stokes number). The model for $PM_{2.5}$ emissions was less definitive and, surprisingly, predicted a 31% decrease in $PM_{2.5}$ emissions when operating 25% below the design inlet velocity. Operating below the design inlet velocity (at a lower Stokes number) to reduce pressure losses (Euler number) would reduce both the financial and the environmental cost of procuring electricity. The unexpected co-benefit suggested by these trials was that emission abatement may improve at the same time, though other empirical trials have shown emissions to be independent of inlet velocity and Stokes number. © 2015 Published by Elsevier B.V.

Megahead, H.A.
Factors of Development Social Work Education in Contemporary Egypt

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Abstract
The development of social work in any country around the globe has its own context that is significantly different from one environment to another. For example, Walton (Williams, 1975) has identified the role of British women and their contributions as one main factor affecting social work development in the British context along with three other factors: the influence of U.S. trends, international events, and patterns in British social work. The current article has identified a set of different factors affecting the development of social work education in Egypt. These factors are the influence of nongovernmental and private education of social workers, the efforts of the early Egyptian social reformers, political factors, and efforts of social work educators. It is concluded that private social work education, the strong practitioners-established and -led professional organizations, the contributions of indigenous social reformers and the Egyptian people, and the institutional and collective efforts of social work educators are cornerstones of the development of social work education in Egypt. As Watts (1995) said: when social work education in a specific country has been examined, a great deal about social work education elsewhere will be learned. Through comparisons, some fresh ideas on social work education have been gleaned. For example, an idea or program in this specific country could be adapted for use in another country. Other countries could learn from the social work education experiences of Egypt. © 2015, Routledge. All rights reserved.

Eissa, M.M.[a] , Samy, M.[a] , Ramadan, A.M.[b] , Amin, A.[a]
Amino-terminated hyperbranched polymer for toughness improvement of epoxy/clay nanocomposites

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Abstract
Amino-terminated hyperbranched poly(ester-amine) (HP) was prepared and used as a toughening agent for epoxy resin inpresence of Montmorillonite organoclay (OMMT) as a reinforcing filler. Several parameters which affect the physico-mechanical properties of epoxy/clay nanocomposites were studied including HP content, clay concentration, and intercalation/exfoliation and degree of dispersion of OMMT clay within the epoxy matrix. The results showed a significant improvement in toughness, physico-mechanical properties and enhancement in thermal stability of epoxy/clay nanocomposites upon using HP (20 wt%) as a toughening agent at low OMMT clay loading (1 wt%). These promising results could open the way for epoxy resins to be used in more high-impact resistance applications. © 2015 Springer-Verlag Berlin Heidelberg

Atta, A.M.[a b] , El-Mahdy, G.A.[a c] , Al-Lohedan, H.A.[a] , Ezzat, A.-R.O.[a]
Synthesis of nonionic amphiphilic chitosan nanoparticles for active corrosion protection of steel

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Abstract

Abstract Here we report new successful work for synthesis of amphiphilic chitosan (CS) nanogels in water using surfactant free method. In this respect, CS was amidated with unsaturated fatty acids such as oleic and linolenic acids to prepare hydrophobic CS. The CS fatty amides were grafted with polyoxyethylene aldehyde monomethyl ether prepared via Schiff base condensation to prepare CSLA-MPEG and CSOA-MPEG amphiphilic CS surfactants. The produced surfactants were converted to nanoparticles using methylene chloride as emulsifying solvent followed by crosslinking with sodium tripolyphosphate. The chemical structure of the prepared CS amphiphilic surfactants were characterized by FTIR and 1HNMR analyses. The particle size distribution of the prepared nanoparticles was characterized by DLS measurements. The surface activities and contact angle measurements of the amphiphilic CS nanoparticles solutions were measured using drop shape analyzer (DSA). The corrosion inhibition measurements of CSLA-MPEG and CSOA-MPEG nanoparticles on steel in 1 M hydrochloric acid solution were investigated using electrochemical polarization and impedance spectroscopy (EIS) methods. © 2015 Published by Elsevier B.V.

Author Keywords

Acid corrosion; Amphiphilic nanoparticles; Chitosan; EIS; Inhibition; Polarization; Steel

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Abstract

A search for pair production of third-generation scalar leptoquarks decaying to top quark and τ lepton pairs is presented using proton-proton collision data at a center-of-mass energy of s=8$$ \sqrt{s}=8 $$ TeV collected with the CMS detector at the LHC and corresponding to an integrated luminosity of 19.7 fb−1. The search is performed using events that contain an electron or a muon, a hadronically decaying τ lepton, and two or more jets. The observations are found to be consistent with the standard model predictions. Assuming that all leptoquarks decay to a top quark and a τ lepton, the existence of pair produced, charge −1/3, third-generation leptoquarks up to a mass of 685 GeV is excluded at 95% confidence level. This result constitutes the first direct limit for leptoquarks decaying into a top quark and a τ lepton, and may also be applied directly to the pair production of bottom squarks decaying predominantly via the R-parity violating coupling λ<inf>333</inf> '. © 2015, The Author(s).

Author Keywords
Beyond Standard Model; Hadron-Hadron Scattering

Al-Ahmari, A.[a] , Nasr, E.A.[b e], Moiduddin, K.[b e], Anwar, S.[b e], Kindi, M.A.[c], Kamrani, A.[d]
A comparative study on the customized design of mandibular reconstruction plates using finite element method
(2015) *Advances in Mechanical Engineering*, 7 (7), pp. 1-11.

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Abstract

Mandible defects and its deformities are serious complications and its precise reconstruction is one of the most challenging tasks in oral maxillofacial surgery. The commercially available standard mandible implants are manually bended before surgery to custom fit the patients jaw. A slight mismatch in the plate and bone alignment may result in the implant failure. However, with the integration of computer-aided design, rapid prototyping, and advanced imaging systems (computed tomography or magnetic resonance imaging), it is possible to produce a customized mandible implant that can precisely fit the patients jaw. The aim of this article is to compare a new design of customized mandible implant (sinewave plate) and compare it with the commonly used straight implant design. The finite element-simulated results reveal that the commonly used straight reconstruction plates are more prone to loosening of the screws due to its higher strain concentration on the screw hole when compared to newly designed sinewave reconstruction plate. Moreover, the straight plate is more sensitive to the chewing load variations and develops almost 20% increase in the stresses when compared to sinewave plate. The study reveals that the sinewave reconstruction plate can significantly enhance the stability and safety of the mandible implant. © SAGE Publications Ltd, unless otherwise noted. Manuscript content on this site is licensed under Creative Commons Licenses.

Author Keywords
finite element analysis; Mandible reconstruction plate design; sensitivity analysis; stress distribution

Ghandehariun, A.[a] , Hussein, H.M.[b c] , Kishawy, H.A.[a]
Machining metal matrix composites: novel analytical force model
(2015) *International Journal of Advanced Manufacturing Technology*, 9 p. Article in Press.

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Abstract

Outstanding mechanical characteristics make metal matrix composites (MMCs) applicable to many industrial applications. However, the very hard reinforcements that provide such remarkable features for MMCs also cause challenges during the machining process. This paper tries to address these challenges through development of a novel analytical model for prediction of cutting force during machining these composites. The force model is based on calculation of power consumption in different parts of the cutting system. The model considers the plastic deformations, different types of friction at various interfaces and debonding and fracture of reinforcements. The cutting force values predicted by the model are compared with experimental values for various MMCs at different cutting conditions. The close agreement between the results verifies the ability of the model to provide accurate estimation of the cutting force during machining MMCs. © 2015 Springer-Verlag London

Author Keywords
Debonding; Energy-based force model; Machining; Metal-matrix composites

Farahat, E.A.[a] [b] , Galal, T.M.[a] , El-Midany, M.M.[a] , Hassan, L.M.[a]
Phenology, biomass and reproductive characteristics of Calotropis procera (Aiton) W.T. Aiton in South Cairo, Egypt
(2015) *Rendiconti Lincei*, 8 p. Article in Press.

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Abstract
Phenology is a major trait structuring life history strategies and its role in shaping plant invasions that has increasing attention. The present study aimed to examine the role of phenology, reproductive, and morphological attributes of Calotropis procera in colonizing urban areas, besides assessing its biomass and developing allometric regression equation for prediction of its biomass. Sixty-three permanent quadrats were selected to represent the distribution of C. procera in urban habitats at South Cairo Province, Egypt. The present study revealed significant positive correlation between fruiting phase of the species and temperature, as well as the vegetative phase and precipitation. C. procera is characterized by continuous flowering for 8 months, with a peak in April and May, which help in reproductive success of the species. It had its highest biomass in November (439 kg ha−1), but the lowest in March (343 kg ha−1), with an annual mean of 388 kg ha−1. The linear regression based on plant volume as an independent variable was found to be the best fit for biomass prediction, with the highest coefficient of determination ($R^2 = 0.81$). The above-ground biomass of this plant encourages its potential use as a renewable energy source. Our study suggests that C. procera has efficient plastic phenological and functional attributes that may enable it to dominate many ecosystems in the future. Efficient management plans are needed to mitigate the risk of this plant on other ecosystems and conserve other native species. © 2015 Accademia Nazionale dei Lincei

Author Keywords
Biomass; Calotropis procera; Colonization; Phenology, regression equations; Urbanization

El-Gendy, Y.A.
Structural characterization and optical properties of thermally evaporated $AgSb_{0.75}In_{0.25}Se_2$ thin films
(2015) *Materials Science in Semiconductor Processing*, 40, pp. 369-373.

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Abstract
Polycrystalline $AgSb_{0.75}In_{0.25}Se_2$ ingot material was prepared by direct fusion of the mixtures of their constituent elements in vacuum-sealed silica tube. The structural characterization of the prepared ingot material was investigated using X-ray diffraction technique. Thin films of the reveiously prepared bulk material were deposited at room temperature using conventional thermal evaporation technique. The structural characterization of the deposited films performed using X-ray diffraction and transmission electron microscope, showed that the as-deposited film has an amorphous phase, whereas those annealed at temperatures T_a 453K are crystalline. The chemical composition of the deposited films was examined using energy dispersive X-ray analysis. The optical properties of the amorphous and crystalline films have been determined from the transmission spectra using envelope method. The refractive index is adequately described in terms of the single-

effective-oscillator model proposed by Wemple-DiDomenico. The optical band gap of the amorphous and crystalline films has been determined from the analysis of the optical absorption coefficient. © 2015 Elsevier Ltd. All rights reserved.

Author Keywords
Chalcogenide material; Optical properties; Structure properties; Thin films

Document Type: Article
Source: Scopus

El-Baz, A.R.[a][c] , Youssef, K.[a] , Mohamed, M.H.[b]
Innovative improvement of a drag wind turbine performance
(2015) *Renewable Energy*, 86, pp. 89-98.

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Abstract
Drag type wind turbines have strong potential in small and medium power applications due to their simple design. However, a major disadvantage of this design is the noticeable low conversion efficiency. Therefore, more research is required to improve the efficiency of this design. The present work introduces a novel design of a three-rotor Savonius turbine with rotors arranged in a triangular pattern. The performance of the new design is assessed by computational modeling of the flow around the three rotors. The 2D computational model is firstly applied to investigate the performance of a single rotor design to validate the model by comparison with experimental measurements. The model introduced an acceptable accuracy compared to the experimental measurements. The performance of the new design is then investigated using the same model. The results indicated that the new design performance has higher power coefficient compared with single rotor design. The peak power coefficient of the three rotor turbine is 44% higher than that of the single rotor design (relative increase). The improved performance is attributed to the favorable interaction between the rotors which accelerates the flow approaching the downstream rotors and generates higher turning moment in the direction of rotation of each rotor. © 2015 Elsevier Ltd.

Author Keywords
Aerodynamics; CFD; Savonius rotor; VAWT; Wind energy

Document Type: Article
Source: Scopus

Abou-Ziyan, H.[a] , Mahmoud, M.[a] , Al-Ajmi, R.[a] , Shedid, M.[b]
Effects of synergetic and antagonistic additive elements on the thermal performance of engine oils at various bulk temperatures
(2015) *Applied Thermal Engineering*, 89, pp. 618-627.

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Abstract
This paper reports effects of additive elements on thermal performance of engine oils during cooling of different engine parts at bulk temperatures from 40 to 150 °C and average wall superheat of 100 °C. The analysis is performed using a back propagation neural network that was trained on experimentally obtained sub-cooled boiling data of engine oils. The results demonstrate that sodium, boron, molybdenum, magnesium and barium additive elements are thermally synergetic while phosphorous, zinc, calcium and silicon elements are thermally antagonistic. Experimental thermal performance of oils could potentially be improved by increasing the concentration of synergetic additive elements or decreasing antagonistic additive elements concentration. © 2015 Elsevier Ltd. All rights reserved.

Author Keywords
Engine oil; Interaction between oil additives; Internal combustion engines; Neural network applications; Oil additives; Oil thermal performance; Subcooled boiling

Document Type: Article
Source: Scopus

Elkhoely, A.[a] , Hafez, H.F.[b] , Ashmawy, A.M.[b] , Badary, O.[c] , Abdelaziz, A.[d] , Mostafa, A.[a] , Shouman, S.A.[b]

Chemopreventive and therapeutic potentials of thymoquinone in HepG2 cells: Mechanistic perspectives
(2015) *Journal of Natural Medicines*, 69 (3), pp. 313-323.

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Abstract
Liver cancer is the fifth commonest malignancy worldwide and the third leading cause of death. Identifying novel curative and preventive therapy may improve its prognosis. In this study, thymoquinone (TQ), the most active biological ingredient of Nigella sativa Linn, was investigated for its antitumor activity. Mechanistic perspectives underlying this antitumor activity were explored by testing its effect on cell cycle, apoptosis, and angiogenesis. In addition, the chemopreventive effect of TQ was carried out by measuring its effect on phase I CYP1A1 and phase II glutathione S-transferase (GST) drug-metabolizing enzymes. The results of the present study revealed the effectiveness of TQ as an antitumor agent against different types of cancer including brain, colon, cervix and liver at both a time- and concentration-dependent manner. In HepG2 cells, it induced G2/M phase cell cycle arrest and a concentration-dependent increase in the percentage of apoptotic cells with an increase in the ratio of Bax/BCL-2. Moreover, the expression of mRNA and protein level of vascular endothelial growth factor decreased as the concentration of TQ increased. Our data showed a significant inhibition of induced phase I CYP1A1 enzyme, and elevation in the content of glutathione and activity of phase II enzyme GST, in HepG2 cells. Our results provide support for the beneficial use of TQ as a therapeutic and chemopreventive agent against liver cancer. © 2015 The Japanese Society of Pharmacognosy and Springer Japan.

Author Keywords
Antitumor; Apoptosis; Cell cycle; Chemopreventive; HepG2; Thymoquinone

Document Type: Article
Source: Scopus

Shabana, Y.M.[a b] , Elsawaf, A.[b]

Nonlinear multi-variable optimization of layered composites with nontraditional interfaces
(2015) *Structural and Multidisciplinary Optimization*, 10 p. Article in Press.

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Abstract
This article deals with a nonlinear multi-variable optimization problem to minimize the critical thermal stress induced in a layered composite plate. The numerical model is solved by using the finite element analysis while the optimization is done by applying the particle swarm optimization technique. The plate contains nontraditional interfaces between the layers while their profiles follow a power law. Different parameters are optimized either individually or in combination by applying single and multi-variable optimizations so as to minimize the critical induced thermal stress in the structure. These optimized parameters include the interface profile parameter, the height of the nontraditional interface on the right surface relative to the mid-surface, and the thicknesses of the layers of the plate. It is found that the critical stress can be minimized greatly when tailoring the geometrical and interface parameters by using their optimum values. © 2015 Springer-Verlag Berlin Heidelberg

Author Keywords
Finite element analysis; Layer composites; Nontraditional interfaces; Particle swarm optimization technique; Stress reduction

Document Type: Article in Press
Source: Scopus

Abdo, F.S.[a b] , Soliman, M.[b] , Ahmed, M.M.[c] , Rizk, R.A.M.[c] , Megahid, R.M.[a]

Calibration of HPGe detector for flowing sample neutron activation analysis
(2015) *Journal of Radioanalytical and Nuclear Chemistry*, 6 p. Article in Press.

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Abstract
This work is concerned with the calibration of the HPGe detector used in flowing sample neutron activation analysis technique. The optimum counting configuration and half-life based correction factors have been estimated using Monte Carlo computer simulations. Depending on detection efficiency, sample volume and flow type around the detector, the optimum geometry was achieved using 4 mm diameter hose rolled in spiral shape around the detector. The derived results showed that the half-life based efficiency correction factors are strongly dependent on sample flow rate and the isotope half-life. © 2015 Akadémiai Kiadó, Budapest, Hungary

Author Keywords
Efficiency calibration; Flowing sample neutron activation analysis; HPGe detector; Liquid sample; Monte Carlo simulation; Short-lived isotopes

Document Type: Article in Press
Source: Scopus

Abdelhady, M.I.S.[a][b] , Kamal, A.M.[b] , Rauf, A.[c] , Mubarak, M.S.[d] , Hadda, T.B.[e]
Bioassay-guided isolation and POM analyses of a new immunomodulatory polyphenolic constituent from Callistemon viridiflorus
(2015) *Natural Product Research*, 5 p. Article in Press.

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Abstract
Chromatographic separation of 80% EtOH extract of Callistemon viridiflorus leaves led to the isolation of six known constituents (1–6) along with a new polyphenolic compound 7 identified as apigenin 4′-O-β-d-glucopyranosyl-(1″′ → 4″)-O-β-d-glucopyranoside. The ethanolic extract of C. viridiflorus leaves and isolated compounds were evaluated for in vitro immunomodulatory activity by means of RAW 264.7 macrophages proliferation (MTT) assay. Ethanolic extract of leaves and compounds 1, 3, 4, 6 and 7 caused a significant increase in macrophage proliferation; these findings may suggest that this medicinal plant could be utilised as an excellent source of compounds for immunomodulatory activity. © 2015 Taylor & Francis

Author Keywords
Callistemon viridiflorus; flavonoids; immunomodulatory; POM analyses

Document Type: Article in Press
Source: Scopus

El-Nahass, M.M.[a] , Emam-Ismail, M.[b] , El-Hagary, M.[c]
Structural, optical and dispersion energy parameters of nickel oxide nanocrystalline thin films prepared by electron beam deposition technique
(2015) *Journal of Alloys and Compounds*, 646, art. no. 34377, pp. 937-945.

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Abstract
Abstract In the present paper, we report on the structure and optical properties of non-annealed nickel oxides (NiO) nanocrystalline semiconductor thin films synthesized by electron beam deposition technique. The structure

parameters of the as-deposited NiO nanocrystalline thin films are extracted from the X-ray powder diffraction (XRD) spectra and shows that the as-deposited films crystallize in the form of cubic NaCl structure with average lattice constant equal to 4.1797 Å and average lattice volume 73.018 (Å)3. In addition, the crystallite size (D) is found to increase from 15 nm to 24 nm with increasing film thickness from 151 nm to 343 nm. In a wide wavelength range, the optical parameters (absorption coefficient, refractive index and refractive index dispersion) of the nanocrystalline NiO thin films have been calculated from transmission and reflection spectra. The variation of the factors $(\alpha hv)^2$ and $(\alpha hv)^{0.5}$ as a function of photon energy identifying the optical transitions as direct transition with energy Egdir≈ 3.849 eV and indirect transition with energy Egindir≈ 2.924 eV and phonon energy of order 212 meV, respectively. In the same wavelength range, the variation of the refractive index show normal dispersion behavior with single oscillator model E_o and E_d parameters obtained as 3.082 eV and 10.47 eV, respectively. The coordination number of the NiO nanocrystalline thin film is identified as 3.36. In addition, the lattice oscillator strength E_l, lattice dielectric constant ε_l, ratio of free carrier density to free carrier effective mass ($N/m*$) and plasma frequency (ω_p) are extracted as 0.31 eV, 5.408, 1.043×10^{47} g-1 cm-3, $5.492 \times 10^{+14}$ s-1, respectively. Also, the molar and volume refractions R_m, V_m and molar polarizability α_m, are also calculated and found to be 3.082 cm3/mol, 11.20 cm3/mol, 2.49(Å)3, respectively. Finally, the Urbach energy E_u is also calculated and found to be 0.38 eV. © 2015 Elsevier B.V.

Author Keywords
E-beam evaporation; Nanomaterial; Nickel oxide thin films; Optical band gap; Optical constants; Single oscillator parameters

Eldokany, I.[a] , El-Rabaie, E.-S.M.[a] , Elhalafawy, S.M.[a] , Zein Eldin, M.A.[a] , Shahieen, M.H.[a] , Soliman, N.F.[b c] , El-Bendary, M.A.M.[d] , El-Naby, M.A.[a] , Al-kamali, F.S.[e] , Elashry, I.F.[f g] , Abd El-Samie, F.E.[a]
Efficient Transmission of Encrypted Images with OFDM in the Presence of Carrier Frequency Offset
(2015) *Wireless Personal Communications*, 84 (1), pp. 475-521.

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Abstract
In this paper, the impact of carrier frequency offset (CFO) and CFO compensation on the transmission of encrypted images with different orthogonal frequency division multiplexing (OFDM) versions is studied. The investigated OFDM versions are the fast Fourier transform OFDM, the discrete cosine transform OFDM, and the discrete wavelet transform OFDM. A comparison between four encryption algorithms with images transmitted through different OFDM versions is presented. These algorithms are data encryption standard, advanced encryption standard, RC6, and chaotic Baker map. This comparison aims to select the most appropriate version of OFDM, and the most suitable image encryption algorithm for efficient image transmission. In the simulation experiments, the peak signal-to-noise ratio at the receiver is used as an evaluation metric for the decrypted image quality. © 2015, Springer Science+Business Media New York.

Author Keywords
AES; CFO; Chaotic map; DES; OFDM; RC6

Kityk, I.V.[b] , Chrunik, M.[a] , Majchrowski, A.[a] , Guidi, M.C.[c] , Angelucci, M.[c] , Kamel, G.[c f] , Fedorchuk, A.O.[d] , Pępczyńska, M.[a] , Jaroszewicz, L.R.[a] , Parasyuk, O.[e] , Bolesta, I.M.[g] , Kowerdziej, R.[a]
Second-order susceptibility spectra for δ-BiB3O6 polymer nanocomposites deposited on the chalcogenide crystals
(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 146, pp. 187-191.

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Abstract

The optimized conditions for the enhancement of the second harmonic generation in the composites of the orthorhombic δ-BiB3O6:Pr3+ nanoparticles embedded in polyvinyl alcohol films and deposited on the AgGaGe2Se6, AgGaGe2.7Si0.3Se8 (90 mol.% AgGaGe3Se8 - 10 mol.% AgGaSi3Se8), and AgGaGe3Se8:Cu substrates were established. The highest second-order susceptibility was achieved during the Ag-Ga-Ge-Se crystalline substrates photo-illumination by nanosecond laser pulses of about 2900 nm wavelength. The effect was found to be completely reversible after the interruption of the photo-inducing stimulation. Complementary studies of Atomic Force Microscopy, AFM, X-ray Diffraction, XRD, and Fourier-Transform Infrared Spectroscopy, and DFT simulations of spectral dependences of the corresponding second-order nonlinear optical susceptibilities, were performed. © 2015 Elsevier B.V.

Author Keywords
DFT simulations; FTIR spectra; Nonlinear optical materials; Polymer nanocomposites

Shaaban, E.R.[a] , El-Hagary, M.[b] , Emam-Ismail, M.[c] , Abd Elnaeim, A.M.[a] , Moustafa, S.H.[b] , Adel, A.[a]
Optical characterization of polycrystalline ZnSe<inf>1-x</inf>Te<inf>x</inf> thin films using variable angle spectroscopic ellipsometry and spectrophotmetery techniques

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Abstract

Abstract Polycrystalline ZnSe<inf>1-x</inf>Te<inf>x</inf> (0.0≤x≤1.0) thin films were deposited by the electron beam deposition technique on corning glass substrate. Two different techniques, Variable Angle Spectroscopic Ellipsometry (VASE) and spectrophotometry, have been applied and compared for characterization of the optical properties of ZnSe<inf>1-x</inf>Te<inf>x</inf> films. The film thickness and optical constants (refractive index (n) and extinction coefficient (k)) of polycrystalline ZnSe<inf>1-x</inf>Te<inf>x</inf> films were obtained by fitting the spectroscopic ellipsometric data (Ψ, Δ) using a three-layer model system in the wavelength range from 400 to 1100 nm. Nevertheless, the optical band gap E<inf>g</inf>opt determined from k values indicating a direct allowed transition. The optical studies of the polycrystalline ZnSe<inf>1-x</inf>Te<inf>x</inf> films showed that the refractive index increases and the E<inf>g</inf>opt decreases. It is worth noting that the obtained values of the optical band gap of the different Te doped films remain in between the reported optical energy gap values of the two ends of the solid solution,ZnSe and ZnTe thin films,. Furthermore, the transmittances spectra of the ZnSe<inf>1-x</inf>Te<inf>x</inf> films are obtained experimentally from spectrophotometry measurements and theoretically calculated using Murmann's exact equation. Comparing the results yielding a fully agreement between experimental and fitted transmittance data. © 2015 Elsevier Ltd.

Author Keywords
optical band gap; Refractive index; Spectrophotmetery; Spectroscopic ellipsometry; ZnSe<inf>1-x</inf>Te<inf>x</inf> thin film

Borhan Uddin, M.[a] , Rahman, M.M.[b c] , Khan, M.A.H.[c] , Ibrahim, T.A.[d e]
Effect of buoyancy ratio on unsteady thermosolutal combined convection in a lid driven trapezoidal enclosure in the presence of magnetic field

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Abstract

In this paper we concentrate to investigate the double diffusive unsteady mixed convection flow in a trapezoidal enclosure in presence of magnetic field. The bottom wall of the enclosure is heated and concentrated uniformly (case-I) and non-uniformly (case-II) while the top wall is cooled and moved uniformly with a constant velocity. Both side walls are adiabatic and impermeable. The coupled governing equations for this phenomenon is solved numerically using weighted residual based Galerkin technique of finite element method (FEM) for Richardson's number (Ri. = 0.1-100) and Buoyancy ratio (Br. = -10 to 10) at time τ= 1.0. Reynolds number, Prandtl number and Lewis number are fixed at 100, 0.71 and 10 respectively. Streamlines, isotherm lines and iso-concentration lines are used to show the result graphically for velocity, temperature and mass distribution respectively. Nusselt and Sherwood number values are presented graphically to show the heat and mass transfer rate from the bottom surface of the cavity. © 2015 Elsevier Ltd.

Author Keywords

Double diffusive; FEM; Magnetic field; Mixed convection; Trapezoidal

Document Type: Article
Source: Scopus

Sohel, M.R.[a] , Saidur, R.[b] , Khaleduzzaman, S.S.[a] , Ibrahim, T.A.[c] [d]
Cooling performance investigation of electronics cooling system using Al<inf>2</inf>O<inf>3</inf>-H<inf>2</inf>O nanofluid
(2015) *International Communications in Heat and Mass Transfer*, 65, pp. 89-93.

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Abstract

In this study, the cooling performance of Al<inf>2</inf>O<inf>3</inf>-H<inf>2</inf>O nanofluid was experimentally investigated as a much better developed alternative for the conventional coolant. For this purpose the nanofluid was passed through the custom-made copper minichannel heat sink which is normally attached with the electronic heat source. The thermal performance of the Al<inf>2</inf>O<inf>3</inf>-H<inf>2</inf>O nanofluid was evaluated at different volume fraction of the nanoparticle as well as at different volume flow rate of the nanofluid. The volume fraction of the nanoparticle varied from 0.05vol.% to 0.2vol.% whereas the volume flow rate was increased from 0.50L/min to 1.25L/min. The experimental results showed that the nanofluid successfully has minimized the heat sink temperature compared to the conventional coolant. It was noticed also that the thermal entropy generation rate was reduced via using nanofluid instead of the normal water. Among the other functions of the nanofluid are to increase the frictional entropy generation rate and to drop the pressure which are insignificant compared to the normal coolant. Given the improved performance of the nanofluid, especially for high heat transportation capacity and low thermal entropy generation rate, it could be used as a better alternative coolant for the electronic cooling system instead of conventional pure water. © 2015 Elsevier Ltd.

Author Keywords

Entropy generation rate; Heat sink; Heat transfer; Minichannel; Nanofluid

Document Type: Article
Source: Scopus

Emam, H.E.[a] , Saleh, N.H.[b] , Nagy, K.S.[c] , Zahran, M.K.[b]
Functionalization of medical cotton by direct incorporation of silver nanoparticles
(2015) *International Journal of Biological Macromolecules*, 78, pp. 249-256. Cited 1 time.

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Abstract

Medical cotton is usually used to clean skin, pack wounds and in other surgical tasks. Such important usages make imparting the antibacterial property to medical cotton is so essential research. The current research focuses on functionalization of medical cotton by direct incorporation of silver nanoparticles (AgNPs) in two-step process namely, pre-alkalization followed by sorption. Decorative color and antibacterial action were accomplished for medical cotton after in situ incorporation of AgNPs without using any other external reducing agent. AgNPs were produced due to the reduction action of alcoholic and aldehydic groups of cotton's skeletal blocks. Cotton fibers were acquired a decorative color attributed to surface plasmon resonance of AgNPs. The treated cotton was characterized by using electron microscope. Results showed that Ag0 with size distribution of 0-160nm was formed in the cotton fibers and their size majority (70%) was less than 80nm. The reduction of Ag+ to Ag0 was confirmed by measuring the carboxylic and aldehydic contents. The treated cotton exhibited excellent antibacterial action at low silver contents. The absorbency of cotton was not affected by treatment. The produced medical cotton could be used to safe cleaning of wounds without getting any microbial infections. © 2015 Elsevier B.V.

Author Keywords
Absorbency; AgNPs; Antibacterial action; Coloration; Functionalization; Medical cotton

Document Type: Article
Source: Scopus

Dkhil, M.A.[a][b], Bauomy, A.A.[b][c], Diab, M.S.M.[d], Wahab, R.[a], Delic, D.[e], Al-Quraishy, S.[a][b]
Impact of gold nanoparticles on brain of mice infected with Schistosoma mansoni
(2015) *Parasitology Research*, 9 p. Article in Press.

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Abstract

Schistosomiasis is a condition characterized by high rates of morbidity and cognitive impairment. It afflicts many people in tropical and sub-tropical countries. Our study aimed to investigate the protective role of gold nanoparticles (GNPs) on the brain of mice infected with Schistosoma mansoni. Characterizations of GNPs were determined by using high-resolution transmission electron microscopy. Three doses of GNPs (0.25, 0.5, and 1.0 mg/kg body weight) were used to treat animals after S. mansoni infection. The infection induced impairments in histological picture as a result of schistosome infection resulting in a disturbance in the content of the brain neurotransmitters, norepinephrine (NE), and dopamine (DA). Also, the infection induced significant reduction in glutathione level; oppositely, the levels of nitric oxide and malondialdehyde were increased significantly. In addition, S. mansoni was able to disregulate the infected mice brain Cacnb4, Cabp4, Vdac3, Glrb, and Adam23 messenger RNA (mRNA). On the other hand, treatment of mice with GNPs could alleviate the histological impairments, the changes in the content of NE and DA, and the brain oxidative damage. Also, GNPs could regulate the gene expression due to S. mansoni infection. Generally, GNPs could decrease the neurooxidative stress and regulated the gene expression in the brain of infected mice. Consequently, our results revealed an anti-neuroschistosomal effect of GNPs in mice infected with S. mansoni. © 2015 Springer-Verlag Berlin Heidelberg

Author Keywords
Brain; Gene expression; Gold nanoparticles; Mice; Neurotransmitters; Oxidative stress; Schistosoma mansoni

Document Type: Article in Press
Source: Scopus

Abdelrazek, F.M.[a], Helal, M.H.[b], Hebishy, A.S.[b], Hassan, S.M.[a]
A Novel Synthesis of Some 1,4-Phenylene-bis-heterocyclic Derivatives and of Some Pyran, Pyrano[2,3-c]pyrazole, and Pyrano[2,3-d]pyrimidine Derivatives [1]
(2015) *Journal of Heterocyclic Chemistry*, 52 (4), pp. 1026-1031.

DOI: 10.1002/jhet.2089

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Abstract
p-Diacetyl benzene 1 undergoes bromination to afford p-bromoacetyl phenacyl bromide 2. Compound 2 reacts with twofold excess of malononitrile to afford 2-{2-[4-(3,3-Dicyanopropionyl)-phenyl]-2-oxo-ethyl}-malononitrile 3. Compound 3 could be cyclized to afford the 1,4-phenylene-bis-furan derivative 4. Compound 3 reacts also with a twofold excess of hydrazine hydrate and phenyl hydrazine under dry conditions at RT to afford the bis-pyrazole derivatives 5a, 5b, respectively. The reaction of 5a, 5b with the same reagents in refluxing dioxane afforded the bis-pyrazolopyridazine derivatives 7a, 7b, respectively. The azo coupling of compound 3 with arene diazonium salts afforded the bis-pyrazole derivatives 9a, 9b, 9c. The β-keto esters 10a, 10b react with benzaldehyde and malononitrile in a one pot synthesis to afford the pyran derivatives 11a, 11b. These latter compounds react with hydrazine hydrate and urea derivatives to afford the pyrano[2,3-c]pyrazoles 15a, 15b and the pyrano[2,3-d]pyrimidine derivatives 17a, 17b, respectively. © 2014 HeteroCorporation.

Ahmed, M.F.[a] , Belal, A.[b] [c]
Design, Synthesis, and Molecular Docking Studies of 2-(Furan-2-yl)quinazolin-4-one Derivatives as Potential Antiproliferative Agents

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Abstract
Fifteen new derivatives of quinazolin-4-one bearing the 2-furyl moiety at position 2 and a substituted phenyl moiety at position 3 were designed and synthesized to be evaluated as cytotoxic agents. Their chemical structures were confirmed by spectral and elemental analysis; cytotoxic activity evaluation was performed against HEPG2, HCT116, and MCF7 cancer cell lines using the sulforhodamine-B assay. All the tested compounds except 6a showed high potency against the HEPG2 cancer cell line (IC_{50} 8-101 nM/mL); 11 compounds out of 15 proved to be potent against HCT116 cells (IC_{50} 3-49nM/mL), also 11 of the tested compounds showed high potency against MCF7 cells with IC_{50} values ranging from 7 to 63nM/mL. The rest of the tested compounds showed IC_{50} values of more than 100nM/mL. Compounds 3e and 4d are the most active compounds against HEPG2 cells; in addition, 3e is the most active compound against MCF7 cells. Also, compounds 4a, 3a, and 3b are the most active compounds against HCT116 cells. Compounds 3a, 3b, 3e, 4a, and 4d were also evaluated for their inhibitory activity against the EGFR tyrosine kinase (EGFR-TK) and showed a percentage inhibitory activity ranging from 53 to 84%. The most potent EGFR-TK inhibitors, 3a (84%), 3b (75%), and 3e (60%), were docked into the ATP binding site of the EGFR to explore their binding mode and possible interactions. New quinazolin-4-one derivatives bearing the 2-furyl moiety at position 2 and a substituted phenyl moiety at position 3 were designed and evaluated as cytotoxic agents in vitro. Selected compounds were evaluated for their EGFR tyrosine kinase (TK) inhibitory activity. The most potent EGFR-TK inhibitors were docked into the ATP binding site of the EGFR to explore their binding mode and possible interactions. © 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

El-Sherbiny, S.[a] , El-Sheikh, S.M.[b] , Barhoum, A.[c]
Preparation and modification of nano calcium carbonate filler from waste marble dust and commercial limestone for papermaking wet end application

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Abstract

The objective of this work was to prepare low cost $CaCO_3$ nanofillers for wet end papermaking application. $CaCO_3$ nanofillers were successfully prepared from commercial limestone and white waste marble dust using wet carbonation technique. Anionic (sodium oleate) and cationic surfactants (CTAB) were used to modify the size, morphology and surface property of $CaCO_3$. The prepared $CaCO_3$ fillers were applied in paper handsheets and their effect on paper quality was systematically investigated. The results obtained from XRD and FTIR revealed that the prepared $CaCO_3$ particles were typically calcite. The presence of surfactant during the preparation significantly reduced the particle size and changed the morphology from scalenohedral to rhombohedral as illustrated from TEM results. The surfactant modification of filler improved the retention and consequently all the paper optical properties significantly increased. However, the strength properties were practically unchanged despite the high retention values obtained compared with GCC, indicating improved affinity of the filler particles to the fibres. Oleate modified $CaCO_3$ showed higher effect on retention, apparent density, opacity, and mechanical properties than the CTAB modified $CaCO_3$. The SEM images of paper handsheets confirmed the results and indicated that the modified nano $CaCO_3$ are highly retained and more effectively adhered and bonded to pulp fibre, in addition to their uniform distribution on paper surface. © 2015 Elsevier B.V.

Author Keywords
Commercial limestone; Nano-calcium carbonate filler; Paper properties; Surface modification; Waste marble

Mohi El-Deen, E.M.[a] , Anwar, M.M.[a] , Hasabelnaby, S.M.[b]
Synthesis and in vitro cytotoxic evaluation of some novel hexahydroquinoline derivatives containing benzofuran moiety

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Abstract

A series of new ethyl 4-(2-(benzofuran-2-yl)-4-substituted-1,4,5,6,7,8-hexahydroquinolin-1-yl)-benzoate 3a–c was synthesized by Michael condensation of benzofuran chalcones 1a–c and cyclohexanone to give 2-(2-benzofuranyl)-4-substituted-5,6,7,8-tetrahydro-4-H -chromene 2a–c, followed by reaction of the latter with ethyl 4-aminobenzoate. Condensation of 3a–c with different amines afforded the corresponding amides 4a–e. On the other hand, upon treatment compounds 3a–c with hydrazine hydrate gave the benzohydrazide derivatives 5a–c. The reaction of compounds 5a–c with different thio/isocyanate gave the corresponding thiosemicarbazide and semicarbazide derivatives 6a–c. Meanwhile compounds 5a–c were reacted with ethyl cyanoacetate and different β-dicarbonyl compounds such as acetyl acetone, ethyl acetoacetate, and diethyl malonate to afford pyrazolyl derivatives 7a, b; 8a, b; 9a, b; and 10a–c, respectively. Moreover, 5a–c were reacted with carbon disulfide to synthesize the corresponding oxadiazolyl derivatives 11a–c, while their condensation with different aromatic aldehydes gave the corresponding Schiff bases 12a–d. Cytotoxic evaluation of some of the newly synthesized compounds against human hepatocellular carcinoma cell lines (HepG-2) revealed that the tested compounds produce promising inhibitory effect against the growth of HepG-2 cells with IC_{50} values ranged from 11.9 to 19.3 µg/mL. © 2015 Springer Science+Business Media Dordrecht

Author Keywords
1,4,5,6,7,8-Hexahydroquinoline; Benzofuran; Carbohydrazide derivative; HepG-2 cells; Substituted pyrazoles

Hashem, F.M.[a] , Al-Sawahli, M.M.[b] , Nasr, M.[a] , Ahmed, O.A.A.[c] [d]
Optimized zein nanospheres for improved oral bioavailability of atorvastatin

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Abstract

Background: This work focuses on the development of atorvastatin utilizing zein, a natural, safe, and biocompatible polymer, as a nanosized formulation in order to overcome the poor oral bioavailability (12%) of the drug. Methods: Twelve experimental runs of atorvastatin–zein nanosphere formula were formulated by a liquid–liquid phase separation method according to custom fractional factorial design to optimize the formulation variables. The factors studied were: weight % of zein to atorvastatin (X_1), pH (X_2), and stirring time (X_3). Levels for each formulation variable were designed. The selected dependent variables were: mean particle size (Y_1), zeta potential (Y_2), drug loading efficiency (Y_3), drug encapsulation efficiency (Y_4), and yield (Y_5). The optimized formulation was assayed for compatibility using an X-ray diffraction assay. In vitro diffusion of the optimized formulation was carried out. A pharmacokinetic study was also done to compare the plasma profile of the atorvastatin–zein nanosphere formulation versus atorvastatin oral suspension and the commercially available tablet. Results: The optimized atorvastatin–zein formulation had a mean particle size of 183 nm, a loading efficiency of 14.86%, and an encapsulation efficiency of 29.71%. The in vitro dissolution assay displayed an initial burst effect, with a cumulative amount of atorvastatin released of 41.76% and 82.3% after 12 and 48 hours, respectively. In Wistar albino rats, the bioavailability of atorvastatin from the optimized atorvastatin–zein formulation was 3-fold greater than that from the atorvastatin suspension and the commercially available tablet. Conclusion: The atorvastatin–zein nanosphere formulation improved the oral delivery and pharmacokinetic profile of atorvastatin by enhancing its oral bioavailability. © 2015 Hashem et al.

Author Keywords
Experimental design; Fractional factorial design; Nanoparticles; Optimization

Hashem, F.M.[a] , Al-Sawahli, M.M.[b] , Nasr, M.[a] , Ahmed, O.A.A.[c] [d]

Custom fractional factorial designs to develop atorvastatin self-nanoemulsifying and nanosuspension delivery systems – Enhancement of oral bioavailability

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Abstract

Poor water solubility of a drug is a major challenge in drug delivery research and a main cause for limited bioavailability and pharmacokinetic parameters. This work aims to utilize custom fractional factorial design to assess the development of self-nanoemulsifying drug delivery systems (SNEDDS) and solid nanosuspensions (NS) in order to enhance the oral delivery of atorvastatin (ATR). According to the design, 14 experimental runs of ATR SNEDDS were formulated utilizing the highly ATR solubilizing SNEDDS components: oleic acid, Tween 80, and propylene glycol. In addition, 12 runs of NS were formulated by the antisolvent precipitation–ultrasonication method. Optimized formulations of SNEDDS and solid NS, deduced from the design, were characterized. Optimized SNEDDS formula exhibited mean globule size of 73.5 nm, zeta potential magnitude of -24.1 mV, and 13.5 μs/cm of electrical conductivity. Optimized solid NS formula exhibited mean particle size of 260.3 nm, 7.4 mV of zeta potential, and 93.2% of yield percentage. Transmission electron microscopy showed SNEDDS droplets formula as discrete spheres. The solid NS morphology showed flaky nanoparticles with irregular shapes using scanning electron microscopy. The release behavior of the optimized SNEDDS formula showed 56.78% of cumulative ATR release after 10 minutes. Solid NS formula showed lower rate of release in the first 30 minutes. Bioavailability estimation in Wistar albino rats revealed an augmentation in ATR bioavailability, relative to ATR suspension and the commercial tablets, from optimized ATR SNEDDS and NS formulations by 193.81% and 155.31%, respectively. The findings of this work showed that the optimized nanocarriers enhance the oral delivery and pharmacokinetic profile of ATR. © 2015 Hashem et al.

Author Keywords
Experimental design; Fractional factorial design; Nanostructures; Optimization

Omar, A.M.[a] [b] , Mahran, M.A.[c] , Ghatge, M.S.[d] , Chowdhury, N.[d] , Bamane, F.H.A.[e] , El-Araby, M.E.[a] [f] , Abdulmalik, O.[g] , Safo, M.K.[d]

Identification of a novel class of covalent modifiers of hemoglobin as potential antisickling agents

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Abstract

Aromatic aldehydes and ethacrynic acid (ECA) exhibit antipolymerization properties that are beneficial for sickle cell disease therapy. Based on the ECA pharmacophore and its atomic interaction with hemoglobin, we designed and synthesized several compounds-designated as KAUS (imidazolylacryloyl derivatives)-that we hypothesized would bind covalently to βCys93 of hemoglobin and inhibit sickling. The compounds surprisingly showed weak allosteric and antisickling properties. X-ray studies of hemoglobin in complex with representative KAUS compounds revealed an unanticipated mode of Michael addition between the β-unsaturated carbon and the N-terminal αVal1 nitrogen at the α-cleft of hemoglobin, with no observable interaction with βCys93. Interestingly, the compounds exhibited almost no reactivity with the free amino acids, l-Val, l-His and l-Lys, but showed some reactivity with both glutathione and l-Cys. Our findings provide a molecular level explanation for the compounds biological activities and an important framework for targeted modifications that would yield novel potent antisickling agents. © The Royal Society of Chemistry 2015.

Document Type: Article
Source: Scopus

El-Kosasy, A.M.[a] , Tawakkol, S.M.[b] , Ayad, M.F.[a] , Sheta, A.I.[c d]
New methods for amlodipine and valsartan native spectrofluorimetric determination, with factors optimization study

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Abstract

Four native fluorescence methods were suggested for simultaneous determination of amlodipine (AML) and valsartan (VAL). These methods were based on excitation of both drugs at λ_{ex} 300 nm, in one step, to give maximum emission at λ_{em} 378 and 496 nm for AML and VAL, respectively. The first method, single λ_{ex} method, was used without any additions. The sensitivity of this method was further increased by the addition of hydroxy propylmethyl cellulose (HPMC) surfactant, β-cyclodextrin, or ferric oxide magnetite nanoparticles, in the other three methods. Different types of surfactants, and different concentration levels of both β-cyclodextrin and ferric oxide nanoparticles, were scanned to determine the optimum conditions for enhancing the sensitivity. Some factors affecting the fluorescence intensity of both cited drugs, like the type and volume of the added solvent (to be used as a sensing agent), and pH of measurement were studied and optimized. The proposed methods could be used in determination of AML and VAL in bulk powder, their laboratory prepared mixtures and pharmaceutical formulations. The obtained results were statistically compared to each other and to that of some reported methods. The specificity of the developed methods was investigated, and the methods were validated according to ICH guidelines. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Amlodipine; Cyclodextrin; Nanoparticles; Sensing agent; Surfactants

Document Type: Article
Source: Scopus

Ghandehariun, A.[a] , Kishawy, H.A.[a] , Umer, U.[b] , Hussein, H.M.[b c]
Analysis of tool-particle interactions during cutting process of metal matrix composites

(2015) *International Journal of Advanced Manufacturing Technology*, 10 p. Article in Press.

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Abstract
Metal matrix composites (MMCs) have become common materials that are employed in different industrial applications due to their outstanding strength and wear resistance. However, machining MMCs is considered to be a challenging process. This paper presents a micro-mechanical finite element analysis developed for simulation of MMC machining. Unlike the previously developed FE models, this model simulates the behavior of all main components that distinguish the MMC, namely the matrix, particles, and the particle-matrix interface, during the process. As a result, various aspects of the process, such as debonding and fracture in the particles and different scenarios of tool-particle interactions can be studied using the proposed model. The predicted forces were compared to the measured ones and used to verify the presented model. The developed model is successful in providing a broad understanding of MMC machining process. © 2015 Springer-Verlag London

Author Keywords
Debonding; Finite element analysis (FEA); Machining; Metal matrix composites (MMCs)

Document Type: Article in Press
Source: Scopus

Qudeiri, J.A.[a] , Umer, U.[a] , Khadra, F.A.[b] , Hussein, H.M.A.[a c] , Al-Ahmari, A.[d] , Darwish, S.[d] , Abidi, M.H.[a]
Layout design optimization of dynamic environment flexible manufacturing systems
(2015) *Advances in Mechanical Engineering*, 7 (6), pp. 1-9.

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Abstract
The proper positioning of machine tools in flexible manufacturing system is one of the factors that lead to increase in production efficiency. Choosing the optimum position of machine tools curtails the total part handling cost between machine tools within the flexible manufacturing system. In this article, a two-stage approach is presented to investigate the best locations of the machine tools in flexible manufacturing system. The location of each machine tool is selected from the available specific and fixed locations in such a way that it will result in best throughput of the flexible manufacturing system. In the first stage of the two-stage approach, the throughput of randomly selected locations of the machine tool in flexible manufacturing system is computed by proposing a production simulation system. The production simulation system utilizes genetic algorithms to find the locations of the machine tools in flexible manufacturing system that achieve the maximum throughput of the flexible manufacturing system. In the second stage, the generated locations are fed into artificial neural network to find a relation between a machine tools location and the throughput that can be used to predict the throughput for any other set of locations. Artificial neural network will result in mitigating the computational time. © SAGE Publications Ltd, unless otherwise noted. Manuscript content on this site is licensed under Creative Commons Licenses.

Author Keywords
artificial neural network; Flexible manufacturing system; genetic algorithm; layout design

Document Type: Article
Source: Scopus

Ahmed, M.F.[a] , Aa. Hashim, A.[b]
Design, synthesis of novel quinazolin-4-one derivatives and biological evaluation against human MCF-7 breast cancer cell line
(2015) *Research on Chemical Intermediates*, 13 p. Article in Press.

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Abstract

A new series of 6,8-dibromo-2-(4-chlorophenyl)quinazolin-4(3H)-one derivatives VI–XIII were synthesized. Their chemical structures were confirmed by spectral and elemental analysis. The cytotoxic effect of the newly synthesized compounds was tested in vitro against human breast cancer cell line (MCF-7). Most of the tested compounds have shown promising cytotoxic activity. Compounds X and XIIIb exerted a powerful cytotoxic effect against MCF-7 with a very low IC50 (0.0015 and 0.0047 µmol/ml), while compounds VI, VII, VIII, XIIb, XI, XIIIc and IX exerted a moderate cytotoxic effect (IC50 0.01523, 0.0213, 0.031, 0.0478, 0.049, 0.068 and 0.079 µmol/ml respectively), compared to doxorubicin (0.0025 µmol/ml). Exploring their apoptotic effect; interestingly,all compounds activated apoptotic cascade in MCF-7. Compounds VI, XIIIb, XIIb, XI, XIIa, VII, V and VIII showed potent effect even much more than doxorubicin by 12.87–5.91 folds, while compounds XIIIc, IX, XIIIa, XIIc and X showed moderate increase in CASP3 activity by 4.96–3.22 folds relative to untreated cells more or less similar to doxorubicin (5.57 folds). © 2015 Springer Science+Business Media Dordrecht

Author Keywords
Breast cancer; Caspase-3; IC50; Quinazolines; Synthesis

Farahat, E.[a b], Linderholm, H.W.[b]
Nutrient resorption efficiency and proficiency in economic wood trees irrigated by treated wastewater in desert planted forests
(2015) *Agricultural Water Management*, 155, pp. 67-75.

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Abstract

Little is known about the impacts of recycled wastewater irrigation on adult tree species, especially the nutrient resorption efficiency (RE) and proficiency (RP) during leaf senescence and whether trace metals are resorbed or not during this process. Here, we present a study on the concentrations of nutrients and trace metals in green and senesced leaves, collected from Eucalyptus camaldulensis and Casuarina spp., in four planted forests irrigated by wastewater (or groundwater as control). Stoichiometric ratios (C:N, C:P, and N:P), RE and RP from senesced leaves of the trees were investigated. The concentrations of trace metals showed normal levels and were below phytotoxic concentrations in green and senesced leaves except for Mn. The intra-specific variations in nutrient concentrations in senesced leaves showed larger differences among the sites than those found in green leaves. The studied tree species excluded excess elements by decreasing its proficiency. The RE for N and P was high under poor soil nutrient conditions, but very low under high availability of nutrients. Resorption of trace metals from senesced leaves was low and presented negative mean values for most metals at all sites. RP values were low or equal to zero for the estimated elements. C:N and C:P ratios were high at low nutrient availability i.e. control site, while N:P ratios were non-significant among sites in green or senesced leaves. Our results illustrate that forest trees have highly variable nutrient resorption capacities that vary under high nutrients availability and indicate that under continuous wastewater irrigation, low or negative resorption efficiency for trace metals and other nutrients is an efficient protective strategy. © 2015 Elsevier B.V.

Author Keywords
Desert forests; Egypt; Resorption efficiency and proficiency; Senesced leaves; Stoichiometric ratios; Wastewater

Elnakish, M.T.[a b c], Schultz, E.J.[a b], Gearinger, R.L.[a b], Saad, N.S.[a b c], Rastogi, N.[a b], Ahmed, A.A.E.[c], Mohler, P.J.[a b], Janssen, P.M.L.[a b]
Differential involvement of various sources of reactive oxygen species in thyroxin-induced hemodynamic changes and contractile dysfunction of the heart and diaphragm muscles
(2015) *Free Radical Biology and Medicine*, 83, pp. 252-261. Cited 1 time.

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Abstract

Thyroid hormones are key regulators of basal metabolic state and oxidative metabolism. Hyperthyroidism has been reported to cause significant alterations in hemodynamics, and in cardiac and diaphragm muscle functions, all of which have been linked to increased oxidative stress. However, the definite source of increased reactive oxygen species (ROS) in each of these phenotypes is still unknown. The goal of the current study was to test the hypothesis that thyroxin (T4) may produce distinct hemodynamic, cardiac, and diaphragm muscle abnormalities by differentially affecting various sources of ROS. Wild-type and T4 mice with and without 2-week treatments with allopurinol (xanthine oxidase inhibitor), apocynin (NADPH oxidase inhibitor), L-NIO (nitric oxide synthase inhibitor), or MitoTEMPO (mitochondria-targeted antioxidant) were studied. Blood pressure and echocardiography were noninvasively evaluated, followed by ex vivo assessments of isolated heart and diaphragm muscle functions. Treatment with L-NIO attenuated the T4-induced hypertension in mice. However, apocynin improved the left-ventricular (LV) dysfunction without preventing the cardiac hypertrophy in these mice. Both allopurinol and MitoTEMPO reduced the T4-induced fatigability of the diaphragm muscles. In conclusion, we show here for the first time that T4 exerts differential effects on various sources of ROS to induce distinct cardiovascular and skeletal muscle phenotypes. Additionally, we find that T4-induced LV dysfunction is independent of cardiac hypertrophy and NADPH oxidase is a key player in this process. Furthermore, we prove the significance of both xanthine oxidase and mitochondrial ROS pathways in T4-induced fatigability of diaphragm muscles. Finally, we confirm the importance of the nitric oxide pathway in T4-induced hypertension. © 2015 Elsevier Inc.

Author Keywords

Berling, I.[a b], Buckley, N.A.[c], Mostafa, A.[d e], Downes, M.A.[a b], Grice, J.[d], Medley, G.[d], Roberts, M.S.[d f], Isbister, G.K.[a b]

2-Methyl-4-chlorophenoxyacetic acid and bromoxynil herbicide death

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Abstract

Case report. We report a fatal case of a 37 year old gentleman who ingested a MCPA/bromoxynil co-formulation herbicide. Although clinically well on initial examination, our patient declined dramatically over his 18 h admission with increasing CO_2 production, hyperthermia and metabolic derangement to eventually die from cardiac asystole 20 h post ingestion. Two hours after ingestion the MCPA concentration was 83.9 μg/mL and bromoxynil concentration was 137 μg/mL. Discussion. The patients' mechanism of death appeared to be uncoupling of oxidative phosphorylation, excess CO_2 production and hyperthermia. There is limited knowledge on the acute toxicity of these herbicides, in particular bromoxynil, and this case highlights the relentless progression of severe toxicity in humans. Copyright © 2015 Informa Healthcare USA, Inc.

Author Keywords

El-Aziz, M.A.[a b], Nabil, T.[a c]

Effect of time-dependent heat source/sink on slip flow and heat transfer from a stretching surface with homotopy analysis method

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Abstract

In this paper, the effect of time-dependent heat source/sink on heat transfer characteristics of the unsteady mixed convection flow over an exponentially stretching surface are investigated analytically. Both hydrodynamic and thermal slip conditions are considered in this flow. The fluid viscosity is assumed to vary as a reciprocal linear function of temperature. The governing equations are simplified by suitable transformations into a system of dimensionless ordinary differential equations. The reduced equations are then solved analytically by the homotopy analysis method (HAM). The convergence of the HAM solution is obtained by plotting $\hbar$ $\hbar$-curves for velocity and temperature gradients. Solutions of the velocity profiles, the temperature profiles, the local skin friction coefficient and the local heat transfer rate are obtained for some representative values of the variable viscosity parameter Θ Θ, mixed convection parameter ξ, velocity slip parameter Γ Γ, thermal slip parameter δ δ and heat source/sink parameter Q_H. © 2015, Springer Science+Business Media Dordrecht.

Author Keywords

Exponentially stretching; Homotopy analysis method; Slip flow; Thermal slip; Unsteady flow; Variable viscosity

Shoair, A.G.F.[a], Toson, E.-S.A.[a], El-Mezayen, H.A.[b]
Synthesis, spectral characterization and anticancer studies of three novel ruthenium(III) 2,2′-bipyridine complexes
(2015) *Applied Organometallic Chemistry*, 29 (6), pp. 412-418.

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Abstract

A series of three new ruthenium(III) bipyridine complexes, [RuCl$_3$(bipy)L] (L = C$_6$H$_5$CHO (Ru1), 4-CH$_3$OC$_6$H$_4$CHO (Ru2) and 4-NO$_2$C$_6$H$_4$CHO (Ru3); bipy = 2,2′-bipyridine), have been synthesized and characterized using microanalysis, magnetic, spectroscopic (IR, UV-visible, electron spin resonance) and cyclic voltammetric techniques. All the ruthenium(III) complexes were found to be stable, paramagnetic and octahedrally coordinated. Electron spin resonance spectra showed an axial symmetry and indicated a tetragonal distortion for the octahedral complexes. All complexes were tested for their cytotoxicities against Ehrlich ascites carcinoma (EAC), superoxide dismutase-like activities and cytoprotective effects of normal human red blood cells against photo-irradiation. All the compounds were found to be cytotoxic with half maximal inhibitory concentration (IC$_{50}$) against EAC at concentrations of 70, 90 and 76 μg for Ru1, Ru2 and Ru3, respectively. Moreover, mean levels of DNA and RNA were significantly elevated in liver tissues of tumorized animals and significantly reduced after treatment of tumorized mice with the complexes. Copyright © 2015 John Wiley & Sons, Ltd.

Author Keywords

antioxidant; antitumour; cyclic voltammetry; cytotoxicity; ruthenium(III) bipyridine

Atta, A.M.[a] [b], El-Mahdy, G.A.[a] [c], Al-Lohedan, H.A.[a], Ezzat, A.R.O.[a]
A new green ionic liquid-based corrosion inhibitor for steel in acidic environments
(2015) *Molecules*, 20 (6), pp. 11131-11153.

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Abstract

This work examines the use of new hydrophobic ionic liquid derivatives, namely octadecylammonium tosylate (ODA-TS) and oleylammonium tosylate (OA-TS) for corrosion protection of steel in 1 M hydrochloric acid solution. Their chemical structures were determined from NMR analyses. The surface activity characteristics of the prepared ODA-TS and OA-TS were evaluated from conductance, surface tension and contact angle measurements. The data indicate the presence of a double bond in the chemical structure of OA-TS modified its surface activity parameters. Potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) measurements, scanning electron microscope (SEM), Energy dispersive X-rays (EDX) analysis and contact angle measurements were utilized to investigate the corrosion protection performance of ODA-TS and OA-TS on steel in acidic solution. The OA-TS and ODA-TS compounds showed good protection performance in acidic chloride solution due to formation of an inhibitive film on the steel surface. © 2015 by the authors.

Author Keywords

Document Type: Article
Source: Scopus

Turky, A.O.[a] [b], Rashad, M.M.[a], Kandil, A.E.-H.T.[c], Bechelany, M.[b]
Tuning the optical, electrical and magnetic properties of Ba$_{0.5}$Sr$_{0.5}$Ti$_x$M$_{1-x}$O$_3$ (BST) nanopowders
(2015) *Physical Chemistry Chemical Physics*, 17 (19), pp. 12553-12560.

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Abstract

Metal doped barium strontium titanate (BST; Ba$_{0.5}$Sr$_{0.5}$Ti$_x$M$_{1-x}$O$_3$) nanopowders have been successfully synthesized through the oxalate precursor route based on low cost starting materials. The effect of metal ion substitution, namely Fe3+, Mn2+, Co2+ and Y3+, on the crystal structure, microstructure and optical, electrical, dielectric and magnetic properties of BST was studied. The results revealed that a crystalline single cubic BST phase was formed for pure and Mn2+, Co2+ and Y3+ ion-substituted BST samples, whereas a tetragonal BST structure was obtained for the Fe3+ substituted BST sample at an annealing temperature of 1000°C for 2 h. Furthermore, addition of the metal ions was found to decrease the crystallite size and unit cell volume of the produced BST phase. The microstructure of the produced pure BST phase was metal ion dependent. Most BST particles appeared as a cubic like structure. The transparency of BST was found to increase with metal substitution. Meanwhile, the band gap energy was increased from 3.4 eV for pure BST to 3.8, 4.1, 4.2 and 4.3 eV as the result of substitution by Fe3+, Mn2+ and Co2+ and Y3+ ions, respectively. The DC resistivity was metal ion dependent. The highest DC resistivity (ρ = 66.60 × 105 Ω cm) was accomplished with the Mn2+ ion. Moreover, the addition of metal ions decreased the dielectric properties of the expected Mn2+ ion and increased the magnetic properties. © the Owner Societies 2015.

Document Type: Article
Source: Scopus

Abu Bakr, S.M.[a], Abd El-Karim, S.S.[b], Said, M.M.[c], Youns, M.M.[d]
Synthesis and anticancer evaluation of novel isoxazole/pyrazole derivatives
(2015) *Research on Chemical Intermediates*, 13 p. Article in Press.

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Abstract

The key intermediate 3-amino-5-methylisoxazole (1) was allowed to react with phthalic anhydride and/or maleic anhydride under different conditions to produce different isoxazole products. Schiff bases 9a–c obtained via the reaction of 1 with different aldehydes were condensed with thioglycolic acid to afford the corresponding thiazolidin-4-one derivatives 10a, b. Furthermore, condensation of the Schiff bases 9a, c with various secondary amines produced

the corresponding 5-substituted pyrazole derivatives 11a–d, respectively. The anticancer activity of some of the newly synthesized compounds was evaluated against Panc-1 and Caco-2 cell lines using doxorubicin as a standard drug. Most of the tested derivatives exhibited high cytotoxic potency against Panc-1 carcinoma cell lines, but moderate to weak activity was obtained against Caco-2 cell lines. © 2015 Springer Science+Business Media Dordrecht

Author Keywords
Anticancer; Caco-2; Isoxazole; Panc-1; Pyrazole

Ghonime, M.G.[a] [b] , Mitra, S.[a] , Eldomany, R.A.[b] , Wewers, M.D.[a] , Gavrilin, M.A.[a]
Inflammasome priming is similar for Francisella species that differentially induce inflammasome activation
(2015) *PLoS ONE*, 10 (5), art. no. e0127278, .

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Abstract
Inflammasome activation is a two-step process where step one, priming, prepares the inflammasome for its subsequent activation, by step two. Classically step one can be induced by LPS priming followed by step two, high dose ATP. Furthermore, when IL-18 processing is used as the inflammasome readout, priming occurs before new protein synthesis. In this context, how intracellular pathogens such as Francisella activate the inflammasome is incompletely understood, particularly regarding the relative importance of priming versus activation steps. To better understand these events we compared Francisella strains that differ in virulence and ability to induce inflammasome activation for their relative effects on step one vs. step two. When using the rapid priming model, i.e., 30 min priming by live or heat killed Francisella strains (step 1), followed by ATP (step 2), we found no difference in IL-18 release, p20 caspase-1 release and ASC oligomerization between Francisella strains (F. novicida, F. holarctica -LVS and F. tularensis Schu S4). This priming is fast, independent of bacteria viability, internalization and phagosome escape, but requires TLR2-mediated ERK phosphorylation. In contrast to their efficient priming capacity, Francisella strains LVS and Schu S4 were impaired in inflammasome triggering compared to F. novicida. Thus, observed differences in inflammasome activation by F. novicida, LVS and Schu S4 depend not on differences in priming but rather on their propensity to trigger the primed inflammasome. © 2015 Ghonime et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Al-Zahrani, J.H.[a] , El-Hagary, M.[b] , El-Taher, A.[c] [d]
Gamma irradiation induced effects on optical properties and single oscillator parameters of Fe-doped CdS diluted magnetic semiconductors thin films
(2015) *Materials Science in Semiconductor Processing*, 39, pp. 74-78.

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Abstract
Gamma radiation (100-500 kGy) induced effects on optical properties and single oscillator parameters of nanocrystalline diluted magnetic semiconductor thin films $Cd_{1-x}Fe_xS$ (x=0.1, 0.15 and 0.2) with different compositions prepared by electron evaporation techniques have been studied. The optical characterization of the films has been carried out from spectral transmittance and reflectance obtained by double beam spectrophotometer in the wavelength range from 190 to 2500 nm. It is clearly shown that the direct optical band gap decreases with the increase in gamma radiation dose. This is attributed to the defect number growth. The refractive index and extinction coefficient have shown clear changes with irradiation and found to increase with the increase of the doses of γ radiation. This post-irradiation increase of the refractive index was interpreted in terms of the film density increase due to ionization and/or atomic displacements. Furthermore, the dispersion of the refractive index is discussed in terms of the Wemple-DiDomenico single oscillator model. The oscillator parameters, the single oscillator energy E_o, the dispersion energy E_d, the static refractive index n_0, average interband

oscillator wavelength λ_o, and the average oscillator strength S_o, were estimated and revealed pronounced changes with irradiation. The observed changes in optical properties and single oscillator parameters clearly indicate the possibility of using Fe doped CdS thin films as a material for gamma radiation dosimeters. © 2015 Elsevier Ltd. All rights reserved.

Author Keywords
Diluted magnetic semiconductors; Fe doped CdS; Gamma irradiation; Optical properties; Single oscillator parameters

Saputera, W.H.[a] , Mul, G.[a] , Hamdy, M.S.[a] [b]
Ti3+-containing titania: Synthesis tactics and photocatalytic performance

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Abstract
Three different synthesis techniques were applied to prepare Ti3+-containing TiO2. The first is a self-doped technique in which TiO2 was reduced in situ at 500 °C by NO and CO gases to produce blue powder (blue titania). The second method is a calcination treatment of a physical mixture consisting of commercial TiO2 Hombikat and Ti2O3 at 600 °C to produce a yellow powder (composite). The third technique is hydrogenation of different commercially available titania (Rutile, P25, and Hombikat) samples at elevated temperatures to produce yellowish white powders. The prepared samples were characterized by means of X-ray diffraction (XRD), nitrogen physisorption measurements, diffuse reflectance UV-Vis and Raman spectroscopy, electron paramagnetic resonance (EPR) spectroscopy, and scanning electron microscopy (SEM). The photocatalytic activity of the prepared materials was tested in the decolourization reaction of methyl orange (MO) under the illumination of 'black light' (λ = 375 nm). The kinetic data of the photocatalytic reactions show that reduced titania samples exhibit higher photocatalytic activity than titania. Furthermore, the highest photocatalytic activity was obtained by hydrogenation of P25 at 500 °C. Moreover, the photo-deposition of platinum nanoparticles on the prepared materials enhanced the photocatalytic performance significantly. Titania samples which were firstly platinized and then hydrogenated were much more active than samples which were hydrogenated first and then platinized. The stability of the Ti3+ containing titania samples in aqueous conditions was found to be low, and needs to be improved to allow application in practice. © 2014 Elsevier B.V. All rights reserved.

Author Keywords
Hydrogenation; Photocatalysis; Pt photo-deposition; Stability; Ti3+; TiO2

Al Meslmani, B.M.[a] , Mahmoud, G.F.[a] [b] , Sommer, F.O.[c] , Lohoff, M.D.[c] , Bakowsky, U.[a]
Multifunctional network-structured film coating for woven and knitted polyethylene terephthalate against cardiovascular graft-associated infections

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Abstract
Multifunctional network-structured polymeric coat for woven and knitted forms of crimped polyethylene terephthalate PET graft was developed to limit graft-associated infections. A newly synthesized antibacterial sulfadimethoxine polyhexylene adipate-b-methoxy polyethylene oxide (SD-PHA-b-MPEO) di-block copolymer was employed. Our figures of merit revealed that the formed coat showed a porous topographic architecture which manifested paramount properties, mostly bacterial anti-adhesion efficiency and biocompatibility with host cells. Compared to untreated grafts, the coat presented marked reduction of adhered Gram-positive Staphylococcus epidermidis previously isolated from a patient's vein catheter by 2.6 and 2.3 folds for woven and knitted grafts, respectively. Similarly, bacterial anti-adhesion effect was observed for Staphylococcus aureus by 2.3 and 2.4 folds, and by 2.9 and 2.7 folds for Gram-

negative Escherichia coli for woven and knitted grafts, respectively. Additionally, adhesion and growth characteristics of L929 cells on the modified grafts revealed no significant effect on the biocompatibility. In conclusion, coating of PET with (SD-PHA-b-MPEO) is a versatile approach offers the desired bacterial anti-adhesion effect and host biocompatibility. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Bacterial anti-adhesion; Biocompatibility; Crimped polyethylene terephthalate; Modified grafts; Network-structured polymeric coat

Gharavi, R.[a] [b] , Hedrich, W.[a] , Wang, H.[a] , Hassan, H.E.[a] [c]
Transporter-Mediated Disposition of Opioids: Implications for Clinical Drug Interactions

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Abstract
Opioid-related deaths, abuse, and drug interactions are growing epidemic problems that have medical, social, and economic implications. Drug transporters play a major role in the disposition of many drugs, including opioids; hence they can modulate their pharmacokinetics, pharmacodynamics and their associated drug-drug interactions (DDIs). Our understanding of the interaction of transporters with many therapeutic agents is improving; however, investigating such interactions with opioids is progressing relatively slowly despite the alarming number of opioids-mediated DDIs that may be related to transporters. This review presents a comprehensive report of the current literature relating to opioids and their drug transporter interactions. Additionally, it highlights the emergence of transporters that are yet to be fully identified but may play prominent roles in the disposition of opioids, the growing interest in transporter genomics for opioids, and the potential implications of opioid-drug transporter interactions for cancer treatments. A better understanding of drug transporters interactions with opioids will provide greater insight into potential clinical DDIs and could help improve opioids safety and efficacy. © 2015 Springer Science+Business Media New York

Bute, M.G.[a] , Shinde, S.D.[a] , Bodas, D.[b] , Fouad, H.[c] [d] , Adhi, K.P.[a] , Gosavi, S.W.[a]
Benzophenone doped polydimethylsiloxane: Self developable composite resist system for its use in a direct write laser lithography application

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Abstract
This paper reports a benzophenone doped polydimethylsiloxane (PDMS) composite resist system, for micro patterning using direct write laser lithography for its use in lab-on-chip (LOC) applications. A 248 nm excimer laser with a 20 ns pulse width is used for microfabrication of doped-PDMS. The effect of two major aspects viz. resist composition and laser processing parameters on the quality of fabricated microstructures is studied and optimized. The lithographic analysis reveals that the doped-PDMS shows self developable sensitivity at lower threshold fluence, 250 mJ cm-2. The optimized composition ratio 10: 1: 0.3 (wt%) of the PDMS monomer: curing agent: Benzophenone (P:C:B) is used for processing and analysis. Comprehensive analysis on the effect of laser ablation parameters (fluence, frequency and number of laser pulses) on etching performance (etch rate, geometry of micropattern and quality of surface) is presented. Increase in etch rate with fluence (250-650 mJ cm-2) is observed and considered to be in a working range. Simultaneously, increase in surface roughness as a function of fluence>>650 mJ cm-2 is observed which can be associated with rapid rise in the photothermal decomposition of the composite resist. However pulse repetition rate (PRR) at 1, 5 and 10 Hz does not offer any significant effect on etch rate. The surface quality at a

higher PRR is deprived due to redeposition of ablated material which concludes 1 Hz as a suitable working frequency. The deterioration of surface quality with increasing PRR is associated with the formation of a heat affected zone, due to cumulative heating, as the increase in temperature is 362 °C at 5 Hz and 624 °C at 10 Hz, above Ts ∼ 1099 °C for 1 Hz. However, the number of pulses and etch rate are inversely related due to the plume effect. The overall study provides a guideline for precise control on fast prototyping direct write laser lithography processes used in LOC applications. © 2015 IOP Publishing Ltd.

Author Keywords
laser lithography; LOC; micropatterning; poly(dimethylsiloxane) (PDMS); self developable composite resist

Document Type: Article
Source: Scopus

Essa, B.M.[a] , Sakr, T.M.[a] , Khedr, M.A.[b] , El-Essawy, F.A.[c] , El-Mohty, A.A.[a]
99mTc-amitrole as a novel selective imaging probe for solid tumor: In silico and preclinical pharmacological study

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Abstract
Lactoperoxidase (LPO) inhibitors are very selective for solid tumor due to their high binding affinity to the LPO enzyme. A computational study was used to select top-ranked LPO inhibitor (alone and in complex with 99mTc) with high in silico affinity. The novel prepared 99mTc-amitrole complex demonstrated both in silico and in vivo high affinity toward solid tumors. 99mTc-amitrole was radio-synthesized with a high radiochemical yield (89.7 ± 3.25). It showed in vitro stability for up to 6 h. Its preclinical evaluation in solid tumor-bearing mice showed high retention and biological accumulation in solid tumor cells with a high Target/Non-Target (T/NT) ratio equal to 4.9 at 60 min post-injection. The data described previously could recommend 99mTc-amitrole as potential targeting scintigraphic probe for solid tumor imaging. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Amitrole; Hypoxia; Imaging; In silico; Lactoperoxidase enzyme; Technetium-99m; Tumor

Document Type: Article
Source: Scopus

Umer, U.[a] , Ashfaq, M.[a] , Qudeiri, J.A.[a] , Hussein, H.M.A.[b c] , Danish, S.N.[d] , Al-Ahmari, A.R.[a]
Modeling machining of particle-reinforced aluminum-based metal matrix composites using cohesive zone elements

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Abstract
Finite element modeling for the machining of heterogeneous materials like particle-reinforced metal matrix composites has not been much successful as compared to homogeneous metals due to several issues. The most challenging issue is to deal with severe mesh distortion due to nonuniform deformation inside the workpiece. Other problems are related to the modeling of the interface between reinforcement particles and matrix and tool-reinforcement particle interaction. In this study, different strategies are adopted for finite element models (FEM) to cope with the above issues and comparative analyses have been performed. These 2D FE models are based on plane strain formulations and utilize a coupled temperature displacement method. The workpiece is modeled using reinforcement particle size and volume fraction inside the base matrix. The interface between the reinforcement particles and the matrix is modeled by using two approaches, with and without cohesive zone elements, and the chip separation is modeled with and without using a parting line. This allows models to simulate the local effects such as tool-reinforcement particle interaction and reinforcement particle debonding. In addition, the models can predict

cutting forces, chip morphology, stresses, and temperature distributions. The effects of different methodologies on the model development, simulation runs, and predicted results have been discussed. The results are compared with experimental data, and it has been found that the utilization of cohesive zone elements (CZE) with the parting line approach seems to be the best one for the modeling of metal matrix composite (MMC) machining. © 2014, Springer-Verlag London.

Author Keywords
Cohesive zone elements (CZE); Finite element models (FEM); Metal matrix composites (MMCs)

Document Type: Article
Source: Scopus

Attallah, A.M.[a] , El-Far, M.[b] , Malak, C.A.A.[c] , Omran, M.M.[d] , Shiha, G.E.[e] , Farid, K.[e] , Barakat, L.A.[f] , Albannan, M.S.[a] , Attallah, A.A.[a] , Abdelrazek, M.A.[a] , Elbendary, M.S.[a] , Sabry, R.[c] , Hamoda, G.A.[a] , Elshemy, M.M.[a] , Ragab, A.A.[a] , Foda, B.M.[a] , Abdallah, S.O.[g]
HCC-DETECT: a combination of nuclear, cytoplasmic, and oncofetal proteins as biomarkers for hepatocellular carcinoma
(2015) *Tumor Biology*, 8 p. Article in Press.

DOI: 10.1007/s13277-015-3501-4

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Abstract
Currently, the search for suitable hepatocellular carcinoma (HCC) biomarkers is very intensive. Besides, efficacy and cost/effectiveness of screening and surveillance of cirrhotics for the diagnosis of HCC is still debated. So, the present study is concerned with the evaluation of cytokeratin-1 (CK-1) and nuclear matrix protein-52 (NMP-52) for identifying HCC. Two-hundred and eighty individuals categorized into three groups [liver fibrosis (F1–F3), cirrhosis (F4), and HCC] constituted this study. Western blot was used for identifying CK-1 and NMP-52 in serum samples. As a result, a single immunoreactive band was shown at 67 and 52 kDa corresponding to CK-1 and NMP-52, respectively. Both CK-1 and NMP-52 bands were cut and electroeluted separately. These markers were quantified in sera using ELISA. Patients with HCC were associated with higher concentrations of CK-1 and NMP-52 than those without HCC with a significant difference ($P < 0.0001$). CK-1 showed an area under receiver-operating characteristic curve (AUC) of 0.83 with 75 % sensitivity and 82 % specificity while NMP-52 yielded 0.72 AUC with 62 % sensitivity and 70 % specificity for identifying HCC. HCC-DETECT comprising CK-1 and NMP-52 together with AFP was then constructed yielding 0.90 AUC for identifying HCC with 80 % sensitivity and 92 % specificity. HCC-DETECT was then tested for separating HCC from F1–F3 showing 0.94 AUC with 80 % sensitivity and 93 % specificity. In conclusion, CK-1 in conjunction with NMP-52 and AFP could have a potential role for improving the detection of HCC with a high degree of accuracy. © 2015 International Society of Oncology and BioMarkers (ISOBM)

Author Keywords
HCC-DETECT; Liver diseases; Serum biomarkers; Western blot

Document Type: Article in Press
Source: Scopus

El Dib, R.A.[a b] , Soliman, H.S.M.[b c] , Hussein, M.H.[d] , Attia, H.G.[e]
Two new flavonoids and biological activity of Astragalus abyssinicus (Hochst) Steud. ex A. Rich. Aerial parts
(2015) *Drug Research*, 65 (5), pp. 259-265.

DOI: 10.1055/s-0034-1377003

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Abstract

2 new flavonoid glycosides, kaempferol 3-O-(4″,6″-di-O-α-L-rhamnopyranosyl)-β-D-glucopyranoside (1) and quercetin 3-O-(4″,6″-di-O-α-L-rhamnopyranosyl)-β-D-glucopyranoside (2), were isolated from the n-butanol soluble fraction of the methanol extract (BF) of Astragalus abyssinicus aerial parts, together with 3 known compounds, rutin (3), kaempferol 3-O-β-D-rutinoside (4) and 5,7,4′-trihydroxy-3′-methoxyisoflavone (5). The structures of the isolated compounds were characterized on the basis of UV, NMR and negative ESI-MS analyses. The BF fraction showed in vitro weak antibacterial activity against Staphylococcus aureus, while 2 and 3 exhibited in vitro antioxidant activity higher than ascorbic acid using DPPH free radical scavenging activity method. © 2015 by Thieme Medical Publishers, Inc.

Park, S.[a] , Mannaa, O.[a] , Khaled, F.[a] , Bougacha, R.[a b] , Mansour, M.S.[a c] , Farooq, A.[a] , Chung, S.H.[a] , Sarathy, S.M.[a]
A comprehensive experimental and modeling study of 2-methylbutanol combustion
(2015) *Combustion and Flame*, 162 (5), pp. 2166-2176. Cited 1 time.

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Abstract

2-Methylbutanol (2-methyl-1-butanol) is one of several next-generation biofuels that can be used as an alternative fuel or blending component for combustion engines. This paper presents new experimental data for 2-methylbutanol, including ignition delay times in a high-pressure shock tube and premixed laminar flame speeds in a constant volume combustion vessel. Shock tube ignition delay times were measured for 2-methylbutanol/air mixtures at three equivalence ratios, temperatures ranging from 750 to 1250. K, and at nominal pressures near 20 and 40. bar. Laminar flame speed data were obtained using the spherically propagating premixed flame configuration at pressures of 1, 2, and 5. bar. A detailed chemical kinetic model for 2-methylbutanol oxidation was developed including high- and low-temperature chemistry based on previous modeling studies on butanol and pentanol isomers. The proposed model was tested against new and existing experimental data at pressures of 1-40. atm, temperatures of 740-1636. K, equivalence ratios of 0.25-2.0. Reaction path and sensitivity analyses were conducted for identifying key reactions at various combustion conditions, and to obtain better understanding of the combustion characteristics of larger alcohols. © 2015 The Combustion Institute.

Attia, M.A.A.[a b] , Orrù, R.[a] , Delogu, F.[a] , Montinaro, S.[a] , Garroni, S.[c] , Ewais, E.M.M.[d] , Cao, G.[a]
Effects of prior annealing on the spark plasma sintering of nanostructured Y$_2$O$_3$ powders
(2015) *Journal of the American Ceramic Society*, 98 (5), pp. 1453-1459.

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Abstract

The effects produced by annealing Y$_2$O$_3$ nanopowders on their spark plasma sintering (SPS) behavior are systematically investigated in this work. It is found that the annealed powders display higher sinterability with respect to the as-received ones. Indeed, the maximum densification level reached from pristine powders is about

97.5%, whereas density decreases when further increasing either the sintering temperature or the dwell time. In contrast, the density of SPS products obtained from pretreated powder monotonically increases with temperature and processing time, thus leading to fully dense materials in 30 min at 1050°C and 60 MPa. Correspondingly, it is found that the annealing treatment markedly inhibits grain coarsening during SPS. Thus, dense translucent samples with grain size below 100 nm can be attained from annealed powders. On the other hand, white-opaque specimens with significantly coarser microstructures (up to 1-μm-sized grains) are obtained when pristine powders are directly processed under the same sintering conditions. Furthermore, it is observed that the annealing treatment of SPS samples in air allows for graphite contamination removal, whereas no improvement in term of light transmittance is produced. © 2015 The American Ceramic Society.

Document Type: Article
Source: Scopus

Rahman, M.M.[a b] , Öztop, H.F.[c] , Steele, M.[a] , Naim, A.G.[a] , Al-Salem, K.[d] , Ibrahim, T.A.[e f]
Unsteady natural convection and statistical analysis in a CNT-water filled cavity with non-isothermal heating
(2015) *International Communications in Heat and Mass Transfer*, 64, pp. 50-60. Cited 1 time.

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Abstract
A computational study has been done in this work to investigate the effects of CNT-water nanofluids in a cavity with non-isothermal heating for higher Rayleigh numbers. The cavity is heated non-isothermally from the bottom wall, it is cooled from the top and vertical walls are adiabatic. Unsteady governing equations of heat and fluid flow are solved via finite element method for different parameters as Ra and φ. A correlation analysis shows that, when controlling for φ and τ there was a significant correlation between Ra and Nu_m. When controlling for Ra and φ there was a negative significant correlation between τ and Nu_m. It is also found that there is an optimum value for nanofluid volume fraction to control heat transfer, temperature distribution and flow field. © 2015 Elsevier Ltd.

Author Keywords
Carbon nanotube; Correlation analysis; Finite element; Natural convection; Non-isothermal heating

Document Type: Article
Source: Scopus

Soliman, N.F.[a b] , Hassan, E.S.[c d] , Shaalan, A.H.A.[a] , Fouad, M.M.[a] , El-Khamy, S.E.[e] , Albagory, Y.[c f] , El-Bendary, M.A.M.[g] , Al-Hanafy, W.[c h] , El-Rabaie, E.-S.M.[c] , Dessouky, M.I.[c] , El-Dolil, S.A.[c] , Alshebeili, S.A.[i] , El-Samie, F.E.A.[c j]
Efficient Image Communication in PAPR Distortion Cases
(2015) *Wireless Personal Communications*, 83 (4), pp. 2773-2834.

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Abstract

In this paper, a proposed method for Peak-to-Average Power Ratio (PAPR) reduction of Orthogonal Frequency Division Multiplexing (OFDM) signals based on discrete transforms is presented for robust image communication. One of the discrete transforms such as discrete wavelet transform, discrete cosine transform, or discrete sine transform is applied to modify the OFDM signal at the output of the inverse fast Fourier transform stage. We first present the proposed OFDM system model with trigonometric transforms for PAPR reduction. Trigonometric transforms improve the performance of the OFDM system, and reduce the PAPR of the OFDM signal. Then, this scheme has been utilized for progressive image transmission using low-density parity-check coded OFDM over frequency-selective fading channels. The set partitioning in hierarchical trees algorithm is used for source coding of the images to be transmitted. The proposed scheme effectively resists the fading impact of frequency-selective fading channels using simple frequency-domain equalization. Simulation experiments are performed for a variety of multipath fading channels. We also propose a chaotic interleaving scheme based on the 2-D chaotic Baker map for PAPR reduction of OFDM signals. The distinctive feature of this scheme is that the transmitted signal has less correlation between samples, and hence the PAPR is minimized. © 2015, Springer Science+Business Media New York.

Author Keywords
Chaotic Baker map; Discrete transforms; LDPC-COFDM; OFDM; PAPR

El-Asmar, H.M.[a f], Taha, M.M.N.[b], El-Kafrawy, S.B.[c], El-Sorogy, A.S.[d e]

Control of Late Holocene Geo-processes on the sustainable development plans of the Tineh Plain, NW Sinai coast, Egypt

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Abstract

The Tineh Plain NW Sinai coast has been the subjected of several studies related to its stratigraphy, geoarchaeology, and sustainable development. Recently, the name of the Tineh Plain has emerged following the government of Egypt's decision to establish a new economic project to develop the Suez Canal Sector (Suez Canal Corridor Mega Project). Landsat and SPOT satellite images acquired for years 1984, 2000, 2006, 2008 and 2010 to detect temporal changes coupled with field relations, verification, sampling, analyzing and photographing were conducted. Change detection of LU/LC show six classes; the beach, the wetland (El-Mallaha lagoon), Sabkhas or salt marshes, urban, agriculture, and fish breeding farms. In 1984, the beach (4.2 km2), El-Mallaha lagoon (26.4 km2), sabkhas or salt marches (236.7 km2) were reduced due to expansion of agriculture (120.3 km2), fish breeding farms (35.7 km2) and controlled by sediment characteristic (salinity and grain size). Accordingly, fish farms grow northward of the Tineh Plain while reclamation and cultivation extends southward. Such activities may threaten the archaeological sits at Tell El-Farama (The City of Pelusium). Three geomorphic units detected, these are the beach, the strand plain, and the deltaic plain. The beach is flat with concavo (accreted) - convex (eroded) shoreline. The strand plain made of accreted beach ridges of very low bundles, set at slight mutual angles, which sometimes truncate one another. The deltaic plain surface composed of intercalations of sand and mud of shoreface, mouth bar, and distributary channel fill. The accreted ridges representing four paleoshorelines related to Late Holocene and dated back to 400–500BP, 1100–1200BP, 1400–1500BP, and 1700–1900BP, those record the Late Holocene history (sea level, floods, and tectonics) of the Tineh Plain. The study area is waiting a plan of sustainable development, it represents phase "A" East Port Said of the Suez Canal Corridor Mega Project. This study raise the alarm of constructing heavy industries and other logistics related to shipping on the fragile environments of the Tineh Plain. This is in fact due to active tectonism, and sediment characteristics. The activities related to agriculture, fish breeding, and salts and food industries are recommended in the framework of sustainable development. It is important to include the Suez Canal Corridor Project a plan to save the ruins of fortifications of Tineh Plain. These are not only Egyptian heritage but also a world one record the history from the Persian invasions of Egypt about 6th or 7th Century B.C., through the Byzantines in 859–860, the Greeks in 954–955, the Arabic Conquest, and the Crusaders in the 12th Century. A cooperation and support from the international organization such as UNESCO should be conducted. © 2015, Springer Science+Business Media Dordrecht.

Author Keywords
Change detection, LU /LC, Geomorphology; Deltaic plain; Sedimentary lithofacies; Shoreline changes; Sinai coast; Strand plain; Tell El-Farama; Tineh Plain

Document Type: Article
Source: Scopus

Rizk, M.[a] , Hendawy, H.A.M.[b] , Abou El-Alamin, M.M.[a] , Moawad, M.I.[a]
Sensitive anodic voltammetric determination of methylergometrine maleate in bulk and pharmaceutical dosage forms using differential pulse voltammetry
(2015) *Journal of Electroanalytical Chemistry*, 749, pp. 53-61.

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Abstract
The voltammetric oxidation behavior of methylergometrine maleate (MM) was investigated applying differential pulse voltammetry (DPV) at three different electrodes; pencil graphite (PGE), carbon paste (CPE) and glassy carbon (GCE) electrodes. Cyclic voltammetric analyses were performed to optimize the voltammetric conditions. MM cyclic voltammogram showed a well-defined anodic peak at around 740-780 mV using Britton Robinson buffer at pH 5.0 for PGE and GCE, and pH 6.0 for CPE. The oxidation process was shown to be completely irreversible and diffusion-controlled. Based on this study, a sensitive quantitative method was proposed for determination of MM in its pure and pharmaceutical dosage forms. Various experimental conditions were examined and optimized; including pH, type of supporting electrolyte, accumulation time, scan rate and electrode material. The results obtained were linear over the concentration ranges 0.10-1.00, 0.08-0.36 and 0.50-5.50 µg/mL with a square of correlation coefficient (R^2) 0.9996, 0.9995 and 0.9994 at PGE, CPE and GCE, respectively. The method showed a minimum detectability (LOD) of 0.02, 0.008 and 0.14 µg/mL and a limit of quantitation (LOQ) of 0.06, 0.02 and 0.42 µg/mL at PGE, CPE and GCE, respectively. The method was validated and compared with the reference valid method. It revealed good accuracy and reproducible results. The anticipated voltammetric procedure has the advantage of being simple, precise, inexpensive and highly sensitive. © 2015 Elsevier B.V.

Author Keywords

Document Type: Article
Source: Scopus

Eissa, S.[a] , Matboli, M.[a] , Sharawy, A.[b] , El-Sharkawi, F.[c]
Prognostic and biological significance of microRNA-221 in breast cancer
(2015) *Gene*, . Article in Press.

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Abstract
Introduction: Breast cancer (BC) is the most notorious cancer between females with high rates of morbidity and mortality. The aim of this study was to determine the differential expression of breast tissues microRNA-221 (miR-221) and assess its prognostic and biological significance in breast cancer (BC). Methods: A quantitative reverse transcription PCR (qPCR) assay was performed to detect the expression of breast tissue miR-221 in different subtypes of BC (n = 76) and controls (n = 36) and its correlations with clinicopathological factors of patients. Univariate and multivariate analyses using the Cox proportional hazards model were performed to analyze the prognostic significance of miR-221 expression. Result: Our data indicated that the relative level of miR-221 expression in BC tissues was significantly higher than that in noncancerous breast tissues ($p < 0.01$). Of 76 BC patients, 62 (81.6%) were positive cases. By statistical analyses, high miR-221 expression was observed to be closely correlated with advanced clinical stage ($p < 0.01$). Moreover, patients with high miR-221 expression had worse 5-year relapse free survival (p = 0.0124). Univariate and multivariate analyses indicated that high miR-221 expression was an independent poor prognostic factor for BC patients. Conclusion: miR-221 is a potential biomarker for predicting the survival of BC patients and may be a molecular therapeutic target for BC. © 2015.

Author Keywords

Ahmed, M.F.[a] , Belal, A.[b]

Synthesis, characterization, and biological evaluation of new quinazolin-4-one derivatives hybridized with pyridine or pyran moiety

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[b] Department of Medicinal Chemistry, Faculty of Pharmacy, Beni-Suef University, Beni-Suef, Egypt

Abstract

A new series of 2-(furan-2-yl)-4-oxoquinazolin-3-phenyl derivatives hybridized with pyridine 3a–d, 4a–d or pyran moiety 5a–d were synthesized; their structures were confirmed by spectral and elemental analysis. Cytotoxicity was evaluated on three cancer cell lines (HEPG2, HCT116 and MCF7) using the sulphorodamine-B assay method and doxorubicin as a reference drug. Compound 5d showed a closely similar activity to doxorubicin on MCF7; their IC_{50} values are 4.6 and 4.4 nmol/mL, respectively. In addition, compounds 4b and 4c exhibited a closely similar activity to doxorubicin on HEPG2 cancer cells; their IC_{50} values expressed in nmol/mL are 6.6, 6.7, and 5.7, respectively. Moreover, compound 4b (IC_{50} = 1.2 nmol/mL) was four times more potent than doxorubicin (IC_{50} = 4.8 nmol/mL) on HCT116, and compound 5d (IC_{50} = 0.2 nmol/mL) revealed potency equal to 24 times the potency of doxorubicin on the same cancer cell line. The most active compounds were screened against EGFR TK, and results showed that compound 5d was the most potent inhibitor; its percentage of inhibition was 95.6. Furthermore, compound 5d was docked into the EGFR binding site to explore its possible interactions with EGFR TK. © 2015 Springer Science+Business Media Dordrecht

Author Keywords

El-Sayed, M.-I.K., Amin, H.-K.

Catha edulis chewing effects on treatment of paranoid schizophrenic patients

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Abstract

Background: The current study's aim is to evaluate the possible interaction effects of khat chewing on treatment of paranoid schizophrenic patients. Patients and methods: In the study group, 42 male subjects suffered from paranoid schizophrenia and were classified according to their khat chewing habits into two subgroups: either khat-chewer subgroup (SKc; n=21; r=11, h=10) or non-khat-chewer subgroup (SNKc; n=21, r=11, h=10). Each subgroup was further subdivided according to type of treatment into r (risperidone) and h (haloperidol). Healthy male subjects (37) were subdivided into healthy khat-chewer as positive controls (HKc, n=17) and healthy non-khat-chewer as negative controls (HNKc, n=20). Plasma dopamine, 3,4-dihydroxyphenylacetic acid (DOPAC), homovanillic acid, 5-hydroxytryptamine (serotonin), 5-hydroxyindoleacetic acid, epinephrine, and norepinephrine were estimated. Results: ANOVA and post hoc analysis showed that dopamine was illustrating significant elevation in all khat chewing groups. DOPAC was illustrating significant decrease in all khat chewing groups with an interesting outcome showing significant increase in DOPAC in SNKcr group due to risperidone effect. Homovanillic acid, serotonin, hydroxyindoleacetic acid, and norepinephrine were illustrating significant elevations in all khat chewing groups. Epinephrine was illustrating significant elevation in all chewers than non-chewers groups. Unexpected significant decrease in epinephrine in the SNKcr group indicated that risperidone drug is decreasing epinephrine through indirect mechanism involving calcium. Conclusion: Khat chewing in schizophrenic patients is contraindicated because it aggravates the disease symptoms, attenuates all used treatment medications, and deteriorates all biochemical markers of the patients. © 2015 Kotb El-Sayed and Amin.

Author Keywords

Ansari, S.G.[a] , Tuz-Zehra, F.[a] , Fouad, H.[b c] , Hassenein, A.S.[c] , Ansari, Z.A.[a]
Effect of flower extracts on the photoconversion efficiency of dye sensitized solar cells fabricated with Sn-doped TiO$_2$

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Abstract
Extensive efforts are being made in enhancing the photoconversion efficiency of TiO$_2$ based dye sensitized solar cells (DSSC) using different approaches. In this work, the Sn-doped TiO$_2$ nanopowder was sensitized with flower extracts of Dahlia Violet (DV), Rabbit flower (RF) and their mixed extract separately other than the commercial N719 dye and DSSC characteristics were studied. Hydrothermal method was used to synthesize Sn-doped TiO$_2$ for 48 h at 150 °C. X-ray diffraction, UV–Vis, FTIR and Raman scattering were used to characterize the synthesized powder. DSSCs of the synthesized powder was fabricated using conventional sandwich type technique sealed with Surlyn® polymer film. The photocurrent–voltage characteristics were measured under solar simulated light using source-meter. It is interesting to note that the flower extract resulted in comparable photoconversion efficiency as that of N719 dye. When the powder was sensitized with N719, 1.66 % efficiency was achieved while mixed extract resulted in 1.28 %, DV in 0.99 % and RF in 0.52 % efficiency. The results of various analysis techniques and cell characteristics are correlated. © 2015, Springer Science+Business Media New York.

Document Type: Article
Source: Scopus

El-Sherbiny, S.[a] , Morsy, F.A.[a] , Hassan, M.S.[b] , Mohamed, H.F.[b]
Enhancing Egyptian kaolinite via calcination and dealumination for application in paper coating

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Abstract
The aim of this study was to optimize the modification of Egyptian kaolinite for application in paper coating. The study focused on four modification methods; sedimentation process, chemical bleaching, calcination, and dealumination. The effect of these methods on the structure of kaolinite was studied using X-ray fluorescence (XRF), X-ray diffractometer (XRD), Fourier transform infrared spectrometer analysis, and field emission SEM. The original and modified kaolinites were applied in paper coating mixtures. The results of XRF analysis showed that the Fe$_2$O$_3$ and TiO$_2$ in Egyptian kaolinite were reduced chemically via sodium dithionite from 0.41% to 0.25% and 2.20% to 2.00%, respectively. Calcination at 900°C, followed by acid activation and bleaching, showed a further decrease in Fe$_2$O$_3$ and TiO$_2$ impurities to 0.012 and 1.45 (wt%), respectively. XRD results revealed that all characteristics reflection of kaolinite disappeared upon calcination. SEM investigation showed a significant reduction in kaolinite particle size. Calcination and dealumination of kaolinite did not improve coated paper roughness, while air permeance and optical properties significantly increased in comparison with commercial kaolinite. In addition, a significant improvement was observed in coated paper mechanical properties including burst, tensile strength, stretch, and tensile energy absorption with respect to original and commercial kaolinite. In contrast, the kaolinite fraction <2 µm highly improved paper gloss, print density, and print gloss, more than calcined kaolinite and its modified pigments. In conclusion, dealumination of calcined kaolinite did not show any further change in all coated paper properties compared to the calcined ones. © 2015, American Coatings Association.

Author Keywords
Acid activation; Calcination; Kaolinite; Optical properties; Paper coating; Print quality

Document Type: Article
Source: Scopus

Abdel-Fattah, M.A.
Grounded theory and action research as pillars for interpretive information systems research: A comparative study

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Abstract
In the literature survey, there is evidence "why an interpretive paradigm is more suitable for evaluating e-government systems". However, more than one method can be used when applying interpretive paradigm for evaluating information systems (as we do not consider e-government systems as exception) such as Action Research (AR) and Grounded Theory (GT). In this regard, two problems will arise: First, there is no explicit method that clarifies how AR and GT methods can be used for evaluating information systems. The second problem is to determine which method of them will be more appropriate for evaluating information systems.Accordingly, two frameworks for evaluating e-government systems have been proposed, namely '. Grounded Evaluation Framework' (GEF) and '. Action Research Evaluation Framework' (AREF), which are based on Grounded Theory (GT) and Action Research (AR) methods respectively, to give an example how GT and AR methods can be used in evaluating information systems. The suggested GEF and AREF have been applied to the "University Enrolment Service" in Egyptian e-government, and the findings have been analyzed to conclude that GEF is more appropriate for evaluating e-government systems. © 2015.

Author Keywords
Action research; E-government; Evaluation; Grounded theory; Interpretive research

Lotfy, H.M.[a] , Hegazy, M.A.[a] , Mowaka, S.[b c], Mohamed, E.H.[b]
Novel spectrophotometric methods for simultaneous determination of Amlodipine, Valsartan and Hydrochlorothiazide in their ternary mixture
(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 140, pp. 495-508. Cited 2 times.

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Abstract
This work represents a comparative study of two smart spectrophotometric techniques namely; successive resolution and progressive resolution for the simultaneous determination of ternary mixtures of Amlodipine (AML), Hydrochlorothiazide (HCT) and Valsartan (VAL) without prior separation steps. These techniques consist of several consecutive steps utilizing zero and/or ratio and/or derivative spectra. By applying successive spectrum subtraction coupled with constant multiplication method, the proposed drugs were obtained in their zero order absorption spectra and determined at their maxima 237.6 nm, 270.5 nm and 250 nm for AML, HCT and VAL, respectively; while by applying successive derivative subtraction they were obtained in their first derivative spectra and determined at P230.8-246, P261.4-278.2, P233.7-246.8 for AML, HCT and VAL respectively. While in the progressive resolution, the concentrations of the components were determined progressively from the same zero order absorption spectrum using absorbance subtraction coupled with absorptivity factor methods or from the same ratio spectrum using only one divisor via amplitude modulation method can be used for the determination of ternary mixtures using only one divisor where the concentrations of the components are determined progressively. The proposed methods were checked using laboratory-prepared mixtures and were successfully applied for the analysis of pharmaceutical formulation containing the cited drugs. Moreover comparative study between spectrum addition technique as a novel enrichment technique and a well established one namely spiking technique was adopted for the analysis of pharmaceutical formulations containing low concentration of AML. The methods were validated as per ICH guidelines where accuracy, precision and specificity were found to be within their acceptable limits. The results obtained from the proposed methods were statistically compared with the reported one where no significant difference was observed. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Absorbance subtraction; Amplitude modulation; Progressive resolution; Spectrum addition; Spectrum subtraction

Salem, H.[c] , Mohamed, D.[a b]
A comparative study of smart spectrophotometric methods for simultaneous determination of a skeletal muscle relaxant and an analgesic in combined dosage form
(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 140, pp. 166-173.

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Abstract

Six simple, specific, accurate and precise spectrophotometric methods were developed and validated for the simultaneous determination of the analgesic drug; paracetamol (PARA) and the skeletal muscle relaxant; dantrolene sodium (DANT). Three methods are manipulating ratio spectra namely; ratio difference (RD), ratio subtraction (RS) and mean centering (MC). The other three methods are utilizing the isoabsorptive point either at zero order namely; absorbance ratio (AR) and absorbance subtraction (AS) or at ratio spectrum namely; amplitude modulation (AM). The proposed spectrophotometric procedures do not require any preliminary separation step. The accuracy, precision and linearity ranges of the proposed methods were determined. The selectivity of the developed methods was investigated by analyzing laboratory prepared mixtures of the drugs and their combined dosage form. Standard deviation values are less than 1.5 in the assay of raw materials and capsules. The obtained results were statistically compared with each other and with those of reported spectrophotometric ones. The comparison showed that there is no significant difference between the proposed methods and the reported methods regarding both accuracy and precision. © 2015 Elsevier B.V. All rights reserved.

Author Keywords

Absorbance subtraction method; Amplitude modulation method; Dantrelax compound® capsules; Dantrolene sodium; Paracetamol

Document Type: Article
Source: Scopus

Farahat, E.[a] [b] , Linderholm, H.W.[b]
The effect of long-term wastewater irrigation on accumulation and transfer of heavy metals in Cupressus sempervirens leaves and adjacent soils
(2015) *Science of the Total Environment*, 512-513, pp. 1-7. Cited 1 time.

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Abstract

Wastewater reuse for agriculture is an important management strategy in areas with limited freshwater resources, yielding potential economic and environmental benefits. Here the effects of long-term irrigation with wastewater on the nutrient contents of green and senesced leaves of Cupressus sempervirens L. were assessed for three planted forests in Egypt. Stoichiometric ratios, transfer factors for nutrients from soil to plant and enrichment factors in contaminated soils were estimated and compared to a ground water irrigated control site. Under wastewater irrigation, C. sempervirens transferred most of the estimated nutrients, particularly heavy metals, from green to senesced leaves. This could be a self-protecting mechanism under continuous wastewater irrigation. The accumulation of four metals (Zn, Mn, Cu and Cd) with transfer factors. >. 1 for wastewater-irrigated trees, indicated the ability for metal accumulation of C. sempervirens. Stoichiometric ratios decreased under wastewater irrigation compared to the control site and global trends, which suggests nutrient disorders in these plants. The values of enrichment factors in the wastewater-irrigated soils showed remarkable availability and distribution of metals. Decreased resorption of metals by senesced leaves of C. sempervirens will add considerable amount of these metals to the soils, which will likely have adverse affects on the desert ecosystem components. © 2015 Elsevier B.V.

Author Keywords

Cupressus sempervirens; Heavy metals; Macro-nutrients; Senesced tissues; Transfer and enrichment factor; Wastewater irrigation

Document Type: Article
Source: Scopus

Yousef, A.[a] [b] [c] , Barakat, N.A.M.[d] , EL-Newehy, M.H.[e] [f] , Ahmed, M.M.[a] , Kim, H.Y.[d]
Catalytic hydrolysis of ammonia borane for hydrogen generation using Cu(0) nanoparticles supported on TiO2 nanofibers
(2015) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 470, pp. 194-201. Cited 2 times.

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Abstract
Cu(0) nanoparticles supported on TiO2 nanofibers (Cu-decorated TiO2 NFs) are introduced as an effective photocatalyst for hydrolytic dehydrogenation of ammonia borane (AB) under solar radiation. The introduced Cu-decorated TiO2 NFs were prepared using electrospinning followed by hydrothermal treatment as a novel route for preparation of metal-decorated metal oxide nanofibers. Interestingly, the utilized physicochemical characterizations showed that the prepared nanocatalyst composed of core TiO2 NFs decorated by Cu(0) NPs. A strong photocatalytic activity for catalytic hydrolysis of AB under solar radiation using the introduced nanocatalysts was observed. The results reveal that high rate of hydrogen release from ammonia borane (2.75 equivalent moles) as compared to undecorated TiO2 NFs (1.6 equivalent moles) and pristine Cu NPs (1.2 equivalent moles). The obtained high hydrogen production, in case of the introduced Cu-decorated TiO2 NFs, is attributed to the dual effect of counter parts. Furthermore, the introduced nanofibers could be utilized for three successive cycles with the same efficiency which reflects high stability. Moreover, the photocatalytic activity of the introduced NFs was further confirmed by photodegradation of methylene blue (MB) under solar radiation; complete removal was observed after 120min. © 2015 Elsevier B.V.

Author Keywords
Ammonia borane complex; Electrospinning; Hydrogen release; Hydrothermal; Metallic copper; Titania nanofibers

Document Type: Article
Source: Scopus

Emam, H.E.[a] , Zahran, M.K.[b]
Ag0 nanoparticles containing cotton fabric: Synthesis, characterization, color data and antibacterial action
(2015) *International Journal of Biological Macromolecules*, 75, pp. 106-114. Cited 2 times.

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Abstract
The main objective of the current research was to successfully employ the reducing and stabilizing features of xanthan gum to synthesize nanosilver, then coating cotton fabrics with the net produced nanosilver in order to obtain finished fabrics valuable in medical applications. Pre-hydrolyzed xanthan gum was used to reduce Ag+ to Ag0 in nano size using a simple one-step rapid synthetic route. The reduction step was followed up by measuring the concentration of reducing sugars eliminated in the reaction medium. The optimum concentration of xanthan gum was 3g/L to reduce 1mmol/L Ag+, as 2.66±0.4g/L was the maximum concentration of reducing sugars obtained in the reaction. Transmission microscope images show that the AgNPs are spherical in shape with mean size 9.1±4.8nm. Cotton fabrics were then coated with the produced AgNPs using pad-dry-cure method. Well dispersed layer from Ag0 on cotton surface was showed under electron microscope. The biocidal activities of the coated fabrics were tested against Staphylococcus aureus and showed excellent results for antibacterial even after 20 washing cycles. This method has the advantage of not necessitating aggressive conditions such as the presence of organic solvents to produce durable antibacterial cotton fabrics. © 2015 Elsevier B.V.

Author Keywords
AgNPs; Antibacterial activities; Color data; Reducing sugars; Silver content; Xanthan

Document Type: Article
Source: Scopus

Borowiec, J.[a] , Hampl, J.[a] , Gebinoga, M.[a] , Elsarnagawy, T.[a] , Elnakady, Y.A.[d] , Fouad, H.[c] , Almajhadi, F.[f] , Fernekorn, U.[b] , Weise, F.[a] , Singh, S.[a] , Elsarnagawy, D.[e] , Schober, A.[a]
Thermoforming techniques for manufacturing porous scaffolds for application in 3D cell cultivation
(2015) *Materials Science and Engineering C*, 49, pp. 509-516.

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Abstract

Within the scientific community, there is an increasing demand to apply advanced cell cultivation substrates with increased physiological functionalities for studying spatially defined cellular interactions. Porous polymeric scaffolds are utilized for mimicking an organ-like structure or engineering complex tissues and have become a key element for three-dimensional (3D) cell cultivation in the meantime. As a consequence, efficient 3D scaffold fabrication methods play an important role in modern biotechnology. Here, we present a novel thermoforming procedure for manufacturing porous 3D scaffolds from permeable materials. We address the issue of precise thermoforming of porous polymer foils by using multilayer polymer thermoforming technology. This technology offers a new method for structuring porous polymer foils that are otherwise available for non-porous polymers only. We successfully manufactured 3D scaffolds from solvent casted and phase separated polylactic acid (PLA) foils and investigated their biocompatibility and basic cellular performance. The HepG2 cell culture in PLA scaffold has shown enhanced albumin secretion rate in comparison to a previously reported polycarbonate based scaffold with similar geometry. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
3D; Cell culture; Hepatocyte; Polylactic acid; Polymer scaffold

Document Type: Article
Source: Scopus

Shaltout, K.[a] , Fawzy, M.[b] , Galal, T.[c] , Awad, M.[b] , El-Barasi, Y.[d] , Saeed, B.[d]
Impact of waste water discharge on the plant communities and size structure of Wadi El-Shees, Al-Jabal Al-Akhdar, Libya

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Abstract

The present study assesses the impact of waste water discharge on the plant communities and size structure of the common woody species in Wadi El-Shees, Al-Jabal Al-Akhdar, Libya. Thirty stands were selected along two adjacent tributaries (polluted and un-polluted) in Wadi El-Shees. Sixty-five species belonging to 60 genera and 34 families were recorded, predominated with therophytes and mono-regional taxa and only one endemic species (Arbutus pavarii). The application of TWINSPAN on the data set, led to the recognition of 4 vegetation groups, two represented each of the polluted and un-polluted regions. Soils of the polluted area have significant higher values of organic matter, salinity, chloride and iron. Ten common woody perennials were selected for estimating the variation in their size structure in the polluted and un-polluted tributaries. These species include one shrublet, two shrubs and 7 trees. It was found that the density and volume of all species except A. pavarii and Sarcopoterium spinosum were higher in the polluted than the un-polluted area. Four size distributions were recognized: inverse J-shaped, bell-shaped, positive and negative skewed distributions. It was concluded that pollution had significant impact on the plant density and sizes structure of the common woody plants in Wadi El-Shees. Such study may help in managing and conserving plant diversity in Northern Libya. © 2014 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

Author Keywords
Density; Endemic; Libya; Pollution; Size structure; Wadi El-Shees

Document Type: Article
Source: Scopus

Abdala, A.M.M.[a b] , Elwekeel, F.N.M.[a c] , Huang, D.[a]

Film cooling effectiveness and flow structures for novel upstream steps
(2015) *Applied Thermal Engineering*, . Article in Press.

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Abstract
In this study, computational simulations were made using ANSYS CFX to predict the improvements in film cooling performance by using novel upstream steps. There are twenty-one novel steps consisting of three groups are tested. The first group consists of a rectangular step with different tilt angles. The second group consists of a normal rectangular step with and without segmentation. The third group consists of curved steps with and without segmentation. Optimizing the curved steps dimensions is performed. The film cooling effectiveness (η) of twenty-one novel steps were investigated and compared with experiment. Velocity profiles, pressure coefficient profiles and turbulent kinetic energy contours were discussed. Blowing ratios in the range (0.5, 1, 1.5 and 2) were investigated. Results indicate that the best novel step is the curved step with width (W/8) and the average values of film cooling effectiveness is increased to 138.8% compared with the experiment. © 2015.

Author Keywords
Adiabatic effectiveness; Film cooling; Heat transfer coefficient; Jet interaction phenomena; Upstream step

Document Type: Article in Press
Source: Scopus

Abdelaziz, T.H.S.
Pole Placement for Single-Input Linear System by Proportional-Derivative State Feedback
(2015) *Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME*, 137 (4), art. no. 041015, .

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Abstract
This paper deals with the direct solution of the pole placement problem for single-input linear systems using proportional-derivative (PD) state feedback. This problem is always solvable for any controllable system. The explicit parametric expressions for the feedback gain controllers are derived which describe the available degrees of freedom offered by PD state feedback. These freedoms are utilized to obtain closed-loop systems with small gains. Its derivation is based on the transformation of linear system into control canonical form by a special coordinate transformation. The solving procedure results into a formula similar to Ackermann’s one. In the present work, both time-invariant and time-varying linear systems are treated. The effectiveness of the proposed method is demonstrated by the simulation examples of both time-invariant and time-varying systems. © 2015 by ASME.

Author Keywords
feedback stabilization; linear systems; PD state feedback; pole placement

Document Type: Article
Source: Scopus

El-Haggar, R.[a] , Al-Wabli, R.I.[b]
Anti-inflammatory screening and molecular modeling of some novel coumarin derivatives
(2015) *Molecules*, 20 (4), pp. 5374-5391.

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Abstract
Coumarin and their derivatives have drawn much attention in the pharmacological and pharmaceutical fields due to their broad range and diverse biological activities. In the present work, starting from the 6-amino-7-hydroxy-4-methyl-2H-chromen-2-one, a series of 6-(substituted benzylamino)-7-hydroxy-4-methyl-2H-chromen-2-ones 1-11 was synthesized and assessed for their anti-inflammatory activity using the carrageenan-induced hind paw edema method. Compounds 2, 3, 4 and 9 showed significant ($p < 0.001$) reduction of rat paw edema volume after 1 h from

the administration of the carrageenan compared to the reference drug, indomethacin. On the other hand, compounds 4 and 8 showed the highest anti-inflammatory activity, surpassing indomethacin after 3 h with 44.05% and 38.10% inhibition, respectively. Additionally, a molecular docking study was performed against the COX enzyme using the MOE 10.2010 software. © 2015 by the authors; licensee MDPI.

Author Keywords
6-amino-8-hydroxycoumarin; Anti-inflammatory; Molecular docking

Ibrahim, N.A.[a] , El-Zairy, M.R.[b] , Eid, B.M.[a] , El-Zairy, E.M.R.[b] , Emam, E.M.[b]
New finishing possibilities for producing durable multifunctional cotton/wool and viscose/wool blended fabrics
(2015) *Carbohydrate Polymers*, 119, pp. 182-193.

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Abstract
This research work focuses on the development of a one-bath functional finishing procedure for imparting durable multifunctional properties such as easy care, soft-hand, antibacterial and/or ultra violet (UV) protection to cotton/wool and viscose/wool blends using diverse finishing combinations and formulations. In this study finishing agents such as reactant resin, silicon softeners, 4-hydroxybenzophenone, triclosan, and pigment colorant were selected using magnesium chloride/citric acid as a mixed catalyst and the pad-dry microwave fixation technique. The results reveal that enhancement in the imparted functional properties are governed by type of the finished substrate as well as nature and concentration of finishing formulation components. The finished fabrics still retained high level of functionalities even after 15 consecutive laundering. Surface morphology and composition of selected samples were investigated using scan electron microscope (SEM) and energy-dispersive X-ray spectroscopy (EDX) analysis. The mode of interactions was also investigated. Practical applications for multifunctionlization of cellulose/wool blended fabrics are possible using these sorts of proper finishing formulations and unique finishing application method. © 2014 Elsevier Ltd.

Author Keywords
Anti-UV; Antibacterial; Cellulose/wool blend; Easy care; Multifunctional finish; Soft-hand

Nasr, T.[a] , Bondock, S.[b c] , Eid, S.[d]
Design, synthesis, antimicrobial evaluation and molecular docking studies of some new 2,3-dihydrothiazoles and 4-thiazolidinones containing sulfisoxazole
(2015) *Journal of Enzyme Inhibition and Medicinal Chemistry*, 11 p. Article in Press.

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Abstract
Microbial resistance to the available drugs poses a serious threat in modern medicine. We report the design, synthesis and in vitro antimicrobial evaluation of new functionalized 2,3-dihydrothiazoles and 4-thiazolidinones tagged with sulfisoxazole moiety. Compound 8d was most active against Bacillis subtilis (MIC, 0.007 µg/mL). Moreover, compounds 7c–d and 8c displayed significant activities against B. subtilis and Streptococcus pneumoniae (MIC, 0.03–0.06 µg/mL and 0.06–0.12 µg/mL versus ampicillin 0.24 µg/mL and 0.12 µg/mL; respectively). Compounds 7a and 7c–d were highly potent against Escherichia coli (MIC, 0.49–0.98 µg/mL versus gentamycin 1.95 µg/mL). On the other hand, compounds 7e and 9c were fourfolds more active than amphotericin B against Syncephalastrum racemosum. Molecular docking studies showed that the synthesized compounds could act as inhibitors for the dihydropteroate synthase enzyme (DHPS). This study is a platform for the future design of more potent antimicrobial agents. © 2015 Informa UK Ltd. All rights reserved: reproduction in whole or part not permitted

Author Keywords
Antimicrobial agents; molecular docking; sulfonamide; thiazole

Hamdalla, M.A.[a] [c] , Rajasekaran, S.[a] , Grant, D.F.[b] , Məndoiu, I.I.[a]
Metabolic pathway predictions for metabolomics: A molecular structure matching approach
(2015) *Journal of Chemical Information and Modeling*, 55 (3), pp. 709-718.

DOI: 10.1021/ci500517v

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Abstract
Metabolic pathways are composed of a series of chemical reactions occurring within a cell. In each pathway, enzymes catalyze the conversion of substrates into structurally similar products. Thus, structural similarity provides a potential means for mapping newly identified biochemical compounds to known metabolic pathways. In this paper, we present TrackSM, a cheminformatics tool designed to associate a chemical compound to a known metabolic pathway based on molecular structure matching techniques. Validation experiments show that TrackSM is capable of associating 93% of tested structures to their correct KEGG pathway class and 88% to their correct individual KEGG pathway. This suggests that TrackSM may be a valuable tool to aid in associating previously unknown small molecules to known biochemical pathways and improve our ability to link metabolomics, proteomic, and genomic data sets. TrackSM is freely available at http://metabolomics.pharm.uconn.edu/?q=Software.html. © 2015 American Chemical Society.

El Shafey, H.M.[a] [b] , Ghanem, S.[c] [d]
Regulation of expression of sodA and msrA genes of corynebacterium glutamicum in response to oxidative and radiative stress
(2015) *Genetics and Molecular Research*, 14 (1), pp. 2104-2117.

DOI: 10.4238/2015.March.20.21

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Abstract
Promoters of genes encoding superoxide dismutase (sodA) and peptide methionine sulfoxide reductase (msrA) from Corynebacterium glutamicum were cloned and sequenced. Promoter region analysis of sodA-msrA was unable to identify putative sites of fixed eventual regulators except for possible sites of fixed OxyR and integration host factor. A study of the regulation of these genes was performed using the lacZ gene of Escherichia coli as a reporter placed under the control of sequences downstream of sodA and msrA. In silico analysis was used to identify regulators in the genome of C. glutamicum, which revealed the absence of homologs of soxRS and arcA and the presence of inactive oxyR and putative candidates of the homologs of ahpC, ohrR, integration host factor, furA, IdeR, diphtheria toxin repressor, and mntR. © FUNPEC-RP.

Author Keywords
Corynebacterium glutamicum; Oxidative stress; Peptide methionine sulfoxide reductase; Superoxide dismutase

Emam, W.I.[a] , Mabied, A.F.[a] , Hashem, H.M.[b] , Selim, M.M.[c] , El-Shabiny, A.M.[a] , Ahmed Farag, I.S.[a]
Controlling polymorphic structures and investigating electric properties of Ca-doped zirconia using solid state ceramic method
(2015) *Journal of Solid State Chemistry*, 228, pp. 153-159.

DOI: 10.1016/j.jssc.2015.03.009

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Abstract
Structural study of $Zr_{1-x}Ca_xO_{2-x}$ samples with $x=0.01-0.15$ were prepared using solid state ceramic method. X-ray diffraction analysis revealed a mixture of the high temperature phase and the monoclinic one for the samples with $x?0.05$. On the other hand, the formation of a single high temperature cubic phase was observed within a concentration range of $x=0.06-0.10$. At concentrations higher than 0.10 the calcium zirconate phase was observed besides the dominant high temperature one. Rietveld refinement of the single phase data clearly revealed, that substitution of zirconium by calcium increases both the lattice parameters as well as the tetrahedral bond length. Ionic to electronic conductivity ratio enhanced considerably as Ca-doping level ascends. The dielectric constant shows strong temperature dependence at lower frequencies. The dielectric loss factor increases rapidly with the increase in temperature at lower frequencies, while decreases with the increase in frequency at higher temperatures. The ionic conduction is considered as the dominant process at higher temperatures. © 2015 Elsevier Inc. All rights reserved.

Author Keywords
Ca-doped zirconia; Electronic/ionic conductivity; Polymorphic structures; Rietveld refinement; Solid state ceramic method

Farahat, E.[a] [b] , Galal, T.[a] , El-Midany, M.[a] , Hassan, L.[a]

Effect of urban habitat heterogeneity on functional traits plasticity of the invasive species Calotropis procera (Aiton) W.T. Aiton

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[b] Department of Earth Sciences, Regional Climate Group, University of Gothenburg, Gothenburg, Sweden

Abstract
Microhabitat heterogeneity with a high environmental variability affects the persistence of species and their population dynamics. This study investigated the effect of urban habitat heterogeneity on the morphological and reproductive traits as well as foliar nutrient contents of Calotropis procera. Sixty-three permanent stands (5 × 5 m) were selected to represent the micro-variations in four urban habitats of C. procera in Cairo, Egypt. C. procera populations showed significant variations in the size structure, biomass and density between the studied habitats. Size class distribution was bell- or biomodal shaped in most habitats, which suggests that C. procera adopts an adult-persistence population survival strategy. It was characterized by low episodic recruitment rates and relative stability. C. procera had significant plasticity in morphological and reproductive traits with changing of soil edaphic factors in urban habitats. Foliar Na, K and P concentrations were significantly different in the studied habitats, in addition to their significant correlations with the same elements in soil. The variation in the functional traits of the plant indicated its ability to persist under urban habitat conditions. It is likely that C. procera may dominate in the future the urban habitats under extensive degradation of the natural habitats of native species. © 2015, Accademia Nazionale dei Lincei.

Author Keywords
Biomass; Functional traits; Giant milkweed; Growth plasticity; Invasion risk; Size structure; Urban habitats

Abu-Elyazeed, O.S.M.

On the ignition delay of two types of Castor oil bio-diesel using shock tube experiments

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Abstract
In the present work, two types of Castor biodiesel were synthesized by using the pyrolysis process. The first was obtained through pyrolysis of raw Castor oil with no-catalyst, while the second was synthesized in the presence of

anhydrous sodium sulphate as a catalyst. Such two types were termed as Castor bio-diesel number 1 (BD1) and Castor bio-diesel number 2 (BD2) with yield of 55% and 52% respectively. The pressure rise ignition delay of these types of Castor bio-diesel was studied, for this purpose, a shock tube test set up was designed and manufacture. It was fully instrumented for ignition delay measurement with two piezo-electric pressure transducers, dual mode charge amplifier, data acquisition card, laptop computer with suitable LabVIEW software. The test variables include the type of fuel (BD1, BD2, and gas oil), equivalence ratio, ignition temperature, and ignition pressure. It was found that the ignition delay of the gas oil was more than those of both BD1 and BD2; the delay period of BD1 was less than that of BD2. Rich and lean mixtures exhibited long delay whilst the minimum delay occurred near the stoichiometric mixture. Also, it was found that the delay period reduced considerably as the ignition pressures and temperatures reduced. Modifications of the CIEs will not be needed to be suitable for running with these types of biodiesels. The shorter ignition delay observed with BD1 and BD2 can lead to a reduction in compression ratio. That makes the engine less stressed and accept turbo-charging more readily. © 2014 Elsevier Ltd.

Author Keywords
Biodiesel; Castor oil; Catalyst; Ignition delay period; Pyrolysis; Shock tube

Dkhil, M.A.[a] [b] , Al-Quraishy, S.[a] , Wahab, R.[a]
Anticoccidial and antioxidant activities of zinc oxide nanoparticles on Eimeria papillata-induced infection in the jejunum

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[b] Department Of Zoology And Entomology, Helwan University, Cairo, Egypt

Abstract
Nanomedicine has recently emerged as a better option for the treatment of various diseases. Here, we investigated the in vivo anticoccidial properties of zinc oxide nanoparticles (ZNPs). ZNPs were crystalline in nature, with a smooth and spherical surface and a diameter in the range of -10-15 nm. The X-ray diffraction pattern was utilized to identify the crystalline property of the grown ZNPs, whereas feld emission scanning electron microscopy was employed to check the size and morphology of the ZNPs. The data showed that mice infected with Eimeria papillata produced 29.7x103+1,500 oocysts/g feces on day 5 postinfection. This output was signifcantly decreased, to 12.5x103+1,000 oocysts, in mice treated with ZNPs. Infection also induced infammation and injury of the jejunum. This was evidenced (1) through an increase in the infammatory histological score, (2) through increased production of nitric oxide and malondialdehyde, and (3) through a decrease in both the glutathione level and goblet cell number in mice jejuna. All these infection-induced parameters were signifcantly altered during treatment with ZNPs. Our results indicate, therefore, that ZNPs have protective effects against E. papillata-induced coccidiosis © 2015, Dkhil et al.

Author Keywords
Eimeria; Jejunum; Mice; Zinc nanoparticle

Ahmed, M.F.[a] , Belal, A.[b] [c] , Youns, M.[d]
Design, synthesis, molecular modeling and anti-breast cancer activity of novel quinazolin-4-one derivatives linked to thiazolidinone, oxadiazole or pyrazole moieties

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Abstract
6,8-Dibromo-2-(4-chlorophenyl)-quinazolin-4-one linked directly to oxadiazole 5, pyrazole 6 or through amide linkage to thiazolidinone 2a–d and 3a–h were synthesized; their chemical structures were confirmed by spectral and elemental analyses. Their anti-breast cancer activity was evaluated against human breast cancer cell line (MCF-7) using resazurin reduction method and doxorubicin as a reference drug. Linking quinazolin-4-one scaffold to oxadiazole or pyrazole gave compounds 5 and 6 with a closely similar activity as doxorubicin; their IC50 was 23, 22

and 22 nmol/ml, respectively; however, the hybridization of quinazolin-4-one with thiazolidinone gave much better activity than doxorubicin. The most active compounds of the hybrid molecules between quinazolin-4-one and thiazolidinone are 2c,d and 3a,f. Their IC50 range was (3–9 nmol/ml). In an attempt to explore the mode of action of the best active compounds, docking on the ATP binding site of EGFR was performed. In vitro screening of these four compounds against EGFR tyrosine kinases showed inhibitory activity range 54–77.2 %. © 2015 Springer Science+Business Media New York

Author Keywords
MCF-7; Oxadiazole; Pyrazole; Quinazolin-4-one; Thiazolidinone

Rashad, M.M.[a] , Soltan, S.[b] , Ramadan, A.A.[b] , Bekheet, M.F.[c] , Rayan, D.A.[a]
Investigation of the structural, optical and magnetic properties of CuO/CuFe$_2$O$_4$ nanocomposites synthesized via simple microemulsion method

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Abstract
Copper oxide CuO/tetragonal CuFe$_2$O$_4$ nanocomposites have been synthesized via the simple microemulsion route by addition of different Fe3+ ion ratios (where Fe3+ content=0, 0.05, 0.10, 0.15 and 0.20). It is clear that the pure CuO phase was observed from the precipitated copper hydroxide precursor at pH 12 as prepared and annealed at 600 to 800°C for 2h. Meanwhile, Fe3+ addition at low substitution concentration (0.05) was indexed pure CuO phase. Further enhancing the Fe3+ up to different concentration from 0.10 to 0.20 was confirmed CuO/t-CuFe$_2$O$_4$ nanocomposites. The ratio of t-CuFe$_2$O$_4$ phase in the composite was increment with increasing the Fe3+ addition. It was increased up to 28% by addition of Fe3+ content of 0.20 and annealed at 800°C for 2h. Indeed, the crystallite size and the theoretical density calculated from XRD pattern were decreased whereas the unit cell volume was increased as the result of Fe3+-addition. The microstructures of the produced pure CuO powders were exhibited pseudo-cubic like structure whereas they were appeared as spherical like structure by addition of Fe3+ ion. Ultraviolet-visible spectrum revealed that three strong band transitions were assigned in the range of 450-950nm, characteristics to the iron substitution. Of note, the band gap energies of pure and CuO/t-CuFe$_2$O$_4$ powders were in the range from 1.38 to 1.47eV. Otherwise, magnetic properties evinced that pure CuO particles have weak ferromagnetic characteristics. Furthermore, the magnetic properties were enhanced with increasing the Fe3+ addition corresponding to increase t-CuFe$_2$O$_4$ phase content. © 2015 Elsevier Ltd and Techna Group S.r.l.

Author Keywords
A: Powder:chemical preparation; B. Nanocomposite; C. Magnetic properties; C. Optical properties; E: Functional applications

Elsayed, K.[a] [b]
Design of a novel gas cyclone vortex finder using the adjoint method

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Abstract
Gas cyclones have many industrial applications in solid-gas separation. The vortex finder is an essential part in gas cyclones where the shape and diameter highly affect the cyclone performance. Many optimization studies have been conducted to optimize the cylindrical vortex finder diameter. This study introduces a new vortex finder shape optimized for minimum pressure drop using the discrete adjoint method. The new optimum cyclone will save 66%

from the driving power needed for the Stairmand cyclone. To efficiently perform the grid independence study for the new cyclone, a new framework using the adjoint solver and the grid convergence index is proposed and tested. The proposed framework relies on local mesh adaptation instead of the global mesh refinement approach. A comparison of numerical simulation of the new cyclone and the Stairmand cyclone confirms the superior performance of the new vortex finder shape for the pressure drop and the cut-off diameter. The results of this study open a new era gas cyclones geometry optimization by using the adjoint method instead of the traditional surrogate based optimization technique. Moreover, the computational costs for the grid independence studies will be reduced via the application of the adjoint methods. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Adjoint method; Cyclone separator; GCI; Geometry optimization; Pressure drop

Document Type: Article
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Abdel Moneim, A.E.[a] , Ortiz, F.[b] , Leonardo-Mendonça, R.C.[b] , Vergano-Villodres, R.[b] , Guerrero-Martínez, J.A.[b] , López, L.C.[b c] , Acuña-Castroviejo, D.[b c d] , Escames, G.[b c]
Protective effects of melatonin against oxidative damage induced by Egyptian cobra (Naja haje) crude venom in rats
(2015) *Acta Tropica*, 143, pp. 58-65. Cited 3 times.

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Abstract
Naja haje envenomation is one of the leading causes of death due to snakebite. Antiserum therapy sometimes fails to provide enough protection against venom toxicity. In this study, we investigated the protective effects of melatonin against N. haje venom in rats. The animals were injected with venom (0.25. mg/kg) and/or melatonin (10. mg/kg) and compared with vehicle-treated rats. There was oxidative/nitrosative damage and apoptosis in the liver, heart, and kidneys of venom-injected rats. Melatonin counteracted the increased lipoperoxidation and nitric oxide, prevented decreased glutathione peroxidase and reductase activity, reduced the glutathione disulfide/glutathione (GSSG/GSH) ratio, and maintained the GSH pool. Furthermore, melatonin administration was associated with a reduction of apoptosis, which was increased in venom-injected rats. Overall, these results suggest that melatonin mitigates oxidative/nitrosative stress in venom-induced cardio-hepato-renal injury in rats. Our results suggest that melatonin treatment may ameliorate some of the effects of N. haje envenomation. © 2014 Elsevier B.V.

Author Keywords
Apoptosis; Melatonin; Naja haje venom; Oxidative damage

Document Type: Article
Source: Scopus

Ahmed, H.H.[a] , Shousha, W.G.[b] , Shalby, A.B.[a] , El-Mezayen, H.A.[b] , Ismaiel, N.N.[c] , Mahmoud, N.S.[a]
Curcumin: a unique antioxidant offers a multimechanistic approach for management of hepatocellular carcinoma in rat model
(2015) *Tumor Biology*, 36 (3), pp. 1667-1678. Cited 1 time.

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Abstract
This study was designed to investigate the role of curcumin against hepatocellular carcinoma (HCC) induced in rats. Forty rats were divided into five groups. Group (1) was negative control. Groups (2), (4), and (5) were orally administrated N-nitrosodiethylamine for HCC induction, then group (2) was left untreated, and group (4) was treated orally with curcumin, while group (5) was intraperitoneally injected with doxorubicin. Group (3) was served as curcumin control group. Serum alpha-fetoprotein, alpha l-fucosidase and vascular endothelial growth factor levels

were analyzed. Gamma glutamyl transferase (GGT) and heat shock protein gp96 (HSPgp96) gene expressions were detected by RT-PCR. The immunohistochemical analysis of proliferating cell nuclear antigen (PCNA) and Ki-67 expressions was performed. Apoptosis was detected using DNA fragmentation assay. Also, histological investigation of liver tissue was achieved. Untreated HCC group showed significant elevation in the studied biochemical markers and significant upregulation in GGT and HSPgp96 gene expression as well as marked increase in PCNA and Ki-67 expression. Furthermore, this group revealed no DNA fragmentation. Histological investigation of liver tissue sections in HCC group revealed a typical anaplasia. On the other hand, the curcumin-treated group showed a significant depletion in the studied tumor markers and a significant downregulation in GGT and HSPgp96 gene expression. Also, this group displayed remarkable decrease in PCNA and Ki-67 expression. Moreover, this group revealed an obvious DNA fragmentation. Interestingly, treatment with curcumin showed remarkable improvement in the histological features of liver tissue. This study revealed the promising therapeutic role of curcumin against hepatocellular carcinoma owing to its antiangiogenic, antiproliferative, and apoptotic effects. © 2014, International Society of Oncology and BioMarkers (ISOBM).

Author Keywords
Angiogenesis; Apoptosis; Curcumin; Hepatocellular carcinoma; Proliferation; Rat

El-Sayed, T.[a] , Imbaby, M.[a] , Jiang, K.[b]
A Finite-Element Hardness Model for Analyzing 316L Stainless Steel/Ceramic Nanocomposites

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Abstract
A new finite-element approach to calculating the hardness of nanocomposite materials based on a 316L stainless steel matrix and nanoceramic inclusions is presented. Two different ceramic inclusions, alumina and titania, are considered. The finite-element model is created on the basis of the spherical Brinell hardness contact model. A quarter of the 3D finite-element is used to model the contact between a spherical tungsten carbide indenter and nanocomposite materials. The effect of the elastic modulus and percentage of the ceramic inclusions on the hardness of the nanocomposites considered is investigated. The finite-element model is verified by comparing its results with experimental data. The comparison showed a good agreement for low-concentration compositions and a slight deviation for highly concentrated ones. © 2015, Springer Science+Business Media New York.

Author Keywords
316L stainless steel; ceramics; finite element; microfabrication; nanocomposites

Elmolla, E.S.[a] , Hamdy, W.[b] , Kassem, A.[b] , Abdel Hady, A.[b]
Comparison of different rice straw based adsorbents for chromium removal from aqueous solutions

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Abstract
Chromium is a well known highly toxic heavy metal and one of the major pollutants in the tannery wastewaters. This research aims at studying the feasibility of using different rice straw-based adsorbents, fine rice straw (FRS), rice straw carbon (RSC), and rice straw activated carbon (RSAC) for removal of chromium from aqueous solution. In batch experiments, effect of operating variables such as contact time, adsorbent dose, pH of solution, and initial chromium concentration have been studied. The best operating conditions were: FRS—equilibrium time 12 h, FRS dose 20 g/l, pH 2; RSC—equilibrium time 8 h, RSC dose 12 g/l, pH 2; RSAC—equilibrium time 4 h, RSAC dose 8 g/l, pH 2. The maximum adsorption achieved at pH 2.0 for all studied adsorbents. The adsorption results for the studied adsorbents were fitted to Langmuir and Freundlich isotherms with correlation coefficient of 0.99, 0.95, respectively, and the maximum adsorption capacity was 7.99, 18.83, and 40.32 mg/g. Desorption of chromium from different rice straw (RS) particles using acid and base treatment exhibited a higher desorption efficiency by more than 85, 95, and 97% for FRS, RSC, and RSAC, respectively. The present study showed that RS could be used as a biosorbent for removal of

chromium from aqueous solution with a limited ratio. © 2015 Balaban Desalination Publications. All rights reserved.

Author Keywords
Adsorbent; Chromium; Heavy metals; Raw agricultural wastes; Rice straw

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Bagdanavicius, A.[a] , Bowen, P.J.[b] , Bradley, D.[c] , Lawes, M.[c] , Mansour, M.S.[d e]
Stretch rate effects and flame surface densities in premixed turbulent combustion up to 1.25MPa
(2015) *Combustion and Flame*, . Article in Press.

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Abstract

Independent research at two centres using a burner and an explosion bomb has revealed important aspects of turbulent premixed flame structure. Measurements at pressures and temperatures up to 1.25MPa and 673K in the two rigs were aimed at quantifying the influences of flame stretch rate and strain rate Markstein number, Ma_{sr} , on both turbulent burning velocity and flame surface density. That on burning velocity is expressed through the stretch rate factor, I_o , or probability of burning, P_b 0.5. These depend on Ma_{sr} , but they grow in importance as the Karlovitz stretch factor, K, increases, and are evaluated from the associated burning velocity data. Planar laser tomography was employed to identify contours of reaction progress variable in both rigs. These enabled both an appropriate flame front for the measurement of the turbulent burning velocity to be identified, and flame surface densities, with the associated factors, to be evaluated. In the explosion measurements, these parameters were derived also from the flame surface area, the derived P_b 0.5 factor and the measured turbulent burning velocities. In the burner measurement they were calculated directly from the flame surface density, which was derived from the flame contours.A new overall correlation is derived for the P_b 0.5 factor, in terms of Ma_{sr} at different K and this is discussed in the light of previous theoretical studies. The wrinkled flame surface area normalised by the area associated with the turbulent burning velocity measurement, and the ratio of turbulent to laminar burning velocity, u_t /u_l , are also evaluated. The higher the value of Pb0.5, the more effective is an increased flame wrinkling in increasing u_t /u_l A correlation of the product of k and the laminar flame thickness with Karlovitz stretch factor and Markstein number is explored using the present data and those of other workers. Some generality is revealed, enabling the wave length associated with the spatial change in mean reaction progress variable to be expressed by the number of laminar flame thicknesses, and the flame volume to be found. © 2015 The Combustion Institute.

Author Keywords
Burning velocity; Flame stretch rate; Flame surface density; Markstein number; Turbulent premixed flame

Document Type: Article in Press
Source: Scopus

Venugopala, K.N.[a b] , Govender, R.[b] , Khedr, M.A.[a c] , Venugopala, R.[d] , Aldhubiab, B.E.[a] , Harsha, S.[a] , Odhav, B.[b]
Design, synthesis, and computational studies on dihydropyrimidine scaffolds as potential lipoxygenase inhibitors and cancer chemopreventive agents
(2015) *Drug Design, Development and Therapy*, 9, pp. 911-921.

DOI: 10.2147/DDDT.S73890

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Abstract

Dihydropyrimidine scaffold has a wide range of potential pharmacological activities such as antiviral, antitubercular, antimalarial, anti-inflammatory, and anticancer properties. 5-Lipoxygenase enzyme is an enzyme responsible for the metabolism of arachidonic acid to leukotrienes. The elevated levels of this enzyme and its metabolites in cancer cells

have a direct relation on the development of cancer when compared to normal cells. The development of novel lipoxygenase inhibitors can have a major role in cancer therapy. A series of substituted 1,4-dihydropyrimidine analogues were synthesized and characterized by 1H-NMR, 13C-NMR, and HRMS. Molecular docking against lipoxygenase enzyme (protein data bank code =3V99) was done using Molecular Operating Environment 2013.08 and Leadit 2.1.2 softwares and showed high affinities. The synthesized compounds were tested for their lipoxygenase inhibitory activity and showed inhibition ranging from 59.37%±0.66% to 81.19%±0.94%. The activity was explained by a molecular docking study. The title compounds were also tested for cytotoxic activity against two human cancer cell lines Michigan Cancer Foundation-7 and human melanoma cells and a normal peripheral blood mononuclear cell line. © 2015 Venugopala et al.

Author Keywords
1,4-dihydropyrimidines; Molecular docking study; Synthesis and characterization

Daoush, W.[b] , Francis, A.[a] , Lin, Y.[c] , German, R.[c]
An exploratory investigation on the in-situ synthesis of SiC/AlN/Al composites by spark plasma sintering
(2015) *Journal of Alloys and Compounds*, 622, pp. 458-462.

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Abstract
The powder mixtures of aluminum and silicon carbonitride (Al-SiCN) have been consolidated into bulk materials by spark plasma sintering. XRD patterns indicated the in-situ formation of SiC and AlN. The density of the SiCN-Al composite sintered by SPS at 500°C is 2.65 g/cm3 or higher in a weight range of SiCN powder particles up to 2.5%. The formation of new phases and the relatively absence of porosities in the matrix composites are attributed to the co-existence of solid-liquid state that leads to the effective densification of the mixed powders. The breakdown of SiCN network structure was considered to result from a reaction between partially aluminum melt and SiCN particles. An improvement in density and hardness is observed. © 2014 Elsevier B.V.

Author Keywords
Al/SiCN composites; Hardness; Microstructure; Spark plasma sintering (SPS)

El Morsy, E.M.[a] , Ahmed, M.A.E.[b] , Ahmed, A.A.E.[a]
Attenuation of renal ischemia/reperfusion injury by açaí extract preconditioning in a rat model
(2015) *Life Sciences*, 123, pp. 35-42.

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[b] Department of Pharmacology and Toxicology, Faculty of Pharmacy, Misr University for Science and Technology (MUST), 6th of October City, Giza, Egypt

Abstract
Aims Renal ischemia/reperfusion (I/R) injury is highly associated with morbidity and mortality. Oxidative stress, inflammation, and apoptosis play pivotal roles in the development of renal dysfunction following renal I/R. Experimental studies have reported the effectiveness of many antioxidant and anti-inflammatory compounds against renal I/R injury. On the other hand, açaí (Euterpe oleracea Mart. Palmae, Arecaceae) has recently gained considerable appreciation as a natural source of antioxidants. However, the effect of açaí extract has not been studied before on renal I/R. Therefore, the present study was carried out to investigate the possible mechanisms of renal injury attenuation by açaí extract in a rat renal I/R model. Main methods To achieve the aim of the study, rats were administered açaí extract at two dose levels (500 and 1000 mg/kg) for 15 consecutive days before bilateral renal I/R induction. Serum and kidneys were isolated and used for subsequent biochemical analysis. Key findings The present data showed that açai extract significantly and dose-dependently attenuated I/R-induced renal damage. It suppressed the levels of blood urea nitrogen (BUN), serum creatinine, and renal tissue content of kidney injury molecule-1 (KIM-1). In addition, it inhibited serum lactate dehydrogenase (LDH) activity. Moreover, renal contents of malondialdehyde (MDA), myeloperoxidase (MPO), interferon-gamma (IFN-γ), caspase-3, collagen IV, and endothelin-1 were reduced, while renal interleukin-10 (IL-10) content was increased by açaí extract administration to rats before renal I/R

induction. Significance Açaí extract ameliorated bilateral I/R-induced renal injury in rats in a dose-dependent manner. © 2014 Elsevier Inc.

Author Keywords
Açaí extract; Caspase-3; Collagen IV; Creatinine; Endothelin-1; IFN-γ; IL-10; KIM-1; LDH; Malondialdehyde; Myeloperoxidase; Renal ischemia/reperfusion

Dabaieh, M.[a] , Wanas, O.[b] , Hegazy, M.A.[c] , Johansson, E.[a]
Reducing cooling demands in a hot dry climate: A simulation study for non-insulated passive cool roof thermal performance in residential buildings

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[b] Architecture Department, Faculty of Fine Arts, Helwan University, Helwan, Egypt
[c] Transsolar Energietechnik GmbH, Stuttgart, Germany

Abstract
In hot dry climates, it is estimated that almost half the urban peak load of energy consumption is used to satisfy air-conditioning cooling demands in summer time. Since the urbanization rate in developing countries - like the case in Egypt - is rising rapidly, the pressure placed on energy resources to satisfy inhabitants' indoor comfort requirements is consequently increasing too. This paper introduces passive cool roof as a means of reducing energy cooling loads for satisfying human comfort requirements in a hot climate. A designed algorithmic hybrid matrix was used to simulate 37 roof design probabilities alternating roof shape, roof material and construction. The result of using a vault roof with high albedo coating shows a fall of 53% in discomfort hours and saves 826 kW h during the summer season compared to the base case of the conventional non insulated flat roof in a typical Cairo residential buildings. It is recommended that the selected cool roof solution be combined with natural ventilation to increase the indoor thermal comfort, and with passive heating strategies to compensate the increase in heating hours. The application is intended for low cost residential buildings in a hot dry climate. © 2014 Elsevier B.V. All rights reserved.

Author Keywords
Cool roof; Cooling demand; Energy efficient roofs; Energy loads; Hot dry climate; Passive cooling; Thermal performance

Lotfy, H.M.[a] , Tawakkol, S.M.[b] , Fahmy, N.M.[c] , Shehata, M.A.[a]
A comparative study of novel spectrophotometric resolution techniques applied for pharmaceutical mixtures with partially or severely overlapped spectra

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[c] Analytical Chemistry Department, Faculty of Pharmacy, Ahram Canadian University, Egypt

Abstract
Simultaneous determination of mixtures of lidocaine hydrochloride (LH), flucortolone pivalate (FCP), in presence of chlorquinaldol (CQ) without prior separation steps was applied using either successive or progressive resolution techniques. According to the concentration of CQ the extent of overlapping changed so it can be eliminated from the mixture to get the binary mixture of LH and FCP using ratio subtraction method for partially overlapped spectra or constant value via amplitude difference followed by ratio subtraction or constant center followed by spectrum subtraction spectrum subtraction for severely overlapped spectra. Successive ratio subtraction was coupled with extended ratio subtraction, constant multiplication, derivative subtraction coupled constant multiplication, and spectrum subtraction can be applied for the analysis of partially overlapped spectra. On the other hand severely overlapped spectra can be analyzed by constant center and the novel methods namely differential dual wavelength (D1 DWL) for CQ, ratio difference and differential derivative ratio (D1 DR) for FCP, while LH was determined by applying constant value via amplitude difference followed by successive ratio subtraction, and successive derivative subtraction. The spectra of the cited drugs can be resolved and their concentrations are determined progressively from the same ratio spectrum using amplitude modulation method. The specificity of the developed methods was

investigated by analyzing laboratory prepared mixtures and were successfully applied for the analysis of pharmaceutical formulations containing the cited drugs with no interference from additives. The proposed methods were validated according to the ICH guidelines. The obtained results were statistically compared with those of the official or reported methods; using student t-test, F-test, and one way ANOVA, showing no significant difference with respect to accuracy and precision. © 2014 Elsevier B.V. All rights reserved.

Author Keywords
Constant center followed by spectrum; Constant value via amplitude difference; Differential derivative ratio; Differential dual wavelength; followed by ratio subtraction; subtraction

Document Type: Article
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Hassanein, A.S.[b] , Khalifa, A.M.[b] , Ibrahim, E.-S.[a]
Fully-automatic synthesis of cine viability CMR images with minimal estimation error
(2015) *Journal of Cardiovascular Magnetic Resonance*, pp. 1-3. Article in Press.

DOI: 10.1186/1532-429X-17-S1-P106

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Document Type: Article in Press
Source: Scopus

Hassanein, A.S.[b] , Khalifa, A.M.[b] , Ibrahim, E.-S.[a]
Estimation of Eulerian strain from tagged CMR images using band-pass optical flow and HARP
(2015) *Journal of Cardiovascular Magnetic Resonance*, pp. 1-2. Article in Press.

DOI: 10.1186/1532-429X-17-S1-P62

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Document Type: Article in Press
Source: Scopus

Makram, A.W.[b] , Khalifa, A.M.[b] , El-Rewaidy, H.[c] , Fahmy, A.S.[c] , Ibrahim, E.-S.[a]
Evaluation of ventricular global function from tagged CMR images
(2015) *Journal of Cardiovascular Magnetic Resonance*, pp. 1-3. Article in Press.

DOI: 10.1186/1532-429X-17-S1-Q30

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Document Type: Article in Press
Source: Scopus

Abbou-Kebir, K.[a d] , Arai, S.[a] , Hassan Ahmed, A.[b c]
Spinel-free dunites as a proxy to komatiitic melt activity in the mantle
(2015) *Lithos*, 216-217, pp. 315-323.

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Abstract

High-Mg dunites, which are spinel-free or spinel-poor, occur as veins that cut across a pod of chromitite within the mantle section deep below the Moho transition zone of the northern Oman ophiolite (Wadi Rajmi). Only thick (>50cm) veins were considered in order to avoid the effects of subsolidus Mg-Fe2+ exchanges with the chromitite wall rock on the compositions of olivine. The spinel-free dunites contain especially high-Mg (Fo>93) olivines, whereas olivines in the spinel-poor dunites have lower Fo contents (Fo91-93). In addition, chromian spinels in the spinel-poor dunites display high values of Cr# up to 0.8 [Cr#=Cr/(Cr+Al) atomic ratio]. We found that these komatiitic dunites formed via an olivine fractional crystallization process, and not by replacement, and that the chromitites served as isolating capsules where melts were preserved from melt-rock reactions with peridotite minerals. The olivines show a continuous trend in their chemistry from the spinel-free dunites, through the spinel-bearing dunites, to the high-Ca boninites described from the northern Oman ophiolite (Fizh Block). This strongly suggests a genetic linkage between the high-Mg spinel-free or spinel-poor dunites and the high-Ca boninites, which respectively represent cumulates and the resultant fractionated melts of a primary komatiitic melt. In this paper, we challenge the prevalent models that rule out the genesis of komatiites in supra-subduction zones and shed light on the conditions of the mantle at an early stage of arc evolution. © 2015 Elsevier B.V.

Author Keywords
Cumulate dunites; High-Ca boninites; Komatiitic melt; Oman ophiolite; Spinel-free dunites

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El-Sayed, A.E.M.[a] , Al-Fulaij, O.A.[b] , Elaasar, A.A.[b c] , El-Defrawy, M.M.[a] , El-Asmy, A.A.[a b]

Spectroscopic characterization and biological activity of dihydrazone transition metal complexes: Crystal structure of 2,3-butanedione bis(isonicotinylhydrazone)
(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 135, pp. 211-218. Cited 2 times.

DOI: 10.1016/j.saa.2014.07.006

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Abstract

Metal complexes of the chloride, nitrate and acetate salts of Co(II), Ni(II) Cu(II), Zn(II), Cd(II) or Hg(II) with 2,3-butanedione bis(isonicotinylhydrazone) [BBINH] have been synthesized and structurally characterized. The crystal of BBINH was solved to crystallize as monoclinic system with space group of P121/c14. The formulae of the complexes were assigned based on the elemental analysis and mass spectra. The formation of BBINH complexes depend on the metal anion used. All complexes are nonelectrolytes except for the complexes 2, 3, 4 are (1:1) and 13 and 14 which are 1:2 electrolytes. BBINH behaves as a neutral tetradentate (N2O 2) in the chloride complexes of Ni(II), Cu(II), Zn(II), Cd(II) and Hg(II). In [Co2(BBINH)(H2O)Cl3]Cl·H 2O, BBINH has the same dentate but with the two Co(II) ions. In the acetate complexes, [Ni2(BBINH-2H)(H2O)2(OAc) 2]·3H2O and [Cu2(BBINH-2H)(OAc) 2]·5H2O, BBINH acts as a binegative tetradentate with the two metal ions. The ligand in the nitrate complexes acts as a neutral bidentate via the two hydrazone azomethine CNHy; the nitrate ions are ionic in the Cd(II) and Zn(II) complexes and covalent in the Ni(II) complex. The data are supported by NMR (1H and 13C) spectra. The magnetic moments and electronic spectra of all complexes provide tetrahedral, square planar and/or octahedral structure. The decomposition of the complexes revealed the outer and inner solvents as well as the remaining residue based on TGA. The complexes have variable activities against some bacteria and fungi. The ligand is inactive against all tested organisms. The activity of Cd(II) and Hg(II) may be related to the geometry of the complexes. © 2014 Elsevier B.V. All rights reserved.

Author Keywords
2,3-Butanedione bis(isonicotinylhydrazone); Antimicrobial activity; Transition metal complexes; X-ray spectroscopy

Document Type: Article
Source: Scopus

Azzam, Y.A.[a b] , El Hameed, A.M.A.[a] , El-Tokhy, F.S.[c] , Ismail, M.[a] , El-harony, M.[d] , Sharaf, S.M.[d]

Investigation and treatment of the aluminizing process for mirrors of astronomical telescopes and optical instruments of space vehicles
(2015) *Applied Thermal Engineering*, 75, pp. 856-866.

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Abstract

A model is developed to estimate the evaporation rate for aluminum of specific mass used, exploited for thin film deposition process. This model is simulated using MATLAB-SIMULINK program that represented the resistive vaporization source. A feedback temperature sensor is used with Proportional Integral (PI) controller to force the temperature gradient to acquire a trajectory suitable for the evaporation process. The simulation results showed that the temperature gradient of 45 K/s is necessary to reach the vaporization of aluminum in 20 s. Experimental results showed that current gradient of 2 A/s applied to the filament is sufficient to get temperature gradient suitable for Al melting. During the evaporation interval the current has to be constant at 50 A for 20 s in order to evaporate all Al parts. The study demonstrates that this technique will help in automating the vaporization process to avoid irregular coating reflection films on the surface of telescope and space vehicle mirrors. © 2014 Elsevier Ltd. All rights reserved.

Author Keywords
Evaporation process control; PI controller; Resistive evaporation source; Telescope mirror coating; Thermal control; Thin film deposition

Document Type: Article
Source: Scopus

Ibrahim, N.A.[a] , Eid, B.M.[a] , Khalil, H.M.[b]
Cellulosic/wool pigment prints with remarkable antibacterial functionalities
(2014) *Carbohydrate Polymers*, 115, pp. 559-567. Cited 2 times.

DOI: 10.1016/j.carbpol.2014.09.013

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Abstract

Several bio-active agents namely choline chloride, triclosan derivative, PEG-600 and 4-hydroxybenzophenone were successfully included into solvent-free pigment formulations, in a single-stage process, followed by screen printing and microwave-fixation to obtain antibacterial functionalized cellulosic/wool pigment prints. Results obtained signify that both the improvement in functionalization and coloration properties are governed by type of antibacterial agent, kind of substrate as well as pigment colorant. The imparted antibacterial activity of the loaded bio-active agents follows the decreasing order: G+ve (Staphylococcus aureus) > G-ve (Escherichia coli), keeping other parameters constant. The imparted functional and coloration properties showed no significant decrease even after 15 washings. Mode of interactions among the nominated substrates, the pigment paste constituents and the bioactive agents were also proposed. © 2014 Published by Elsevier Ltd.

Author Keywords
Antibacterial finish; Cellulose/wool blend; Pigment printing; Single-stage process; Solvent-free

Document Type: Article
Source: Scopus

Abdel Moneim, A.E.
The neuroprotective effect of berberine in mercury-induced neurotoxicity in rats
(2015) *Metabolic Brain Disease*, 8 p. Article in Press. Cited 3 times.

DOI: 10.1007/s11011-015-9652-6

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Abstract

The central nervous system is one of the most vulnerable organs affected by mercury toxicity. Both acute and chronic exposure to mercury is also known to cause a variety of neurological or psychiatric disorders. Here, the neuroprotective effect of berberine (BN; 100 mg/kg bwt) on mercuric chloride (HgCl2; 0.4 mg/kg bwt) induced neurotoxicity and oxidative stress was examined in rats. Adult male albino Wistar rats were injected with HgCl2 for 7 days. HgCl2 treatment induced oxidative stress by increasing lipid peroxidation (LPO) and nitrite/nitrate (nitric oxide; NO) production along with a concomitant decrease in glutathione (GSH) and various antioxidant enzymes, namely superoxide dismutase, catalase, glutathione peroxidase and glutathione reductase. Pre-treatment of rats with BN inhibited LPO and NO production, whereas it increased GSH content. Activities of antioxidant enzymes were also restored concomitantly when compared to the control rats after BN administration. Berberine also caused decrease in TNF-α level and caspase-3 activity which was higher with HgCl2. Furthermore, treatment with BN inhibited apoptosis, as indicated by the reduction of Bax/Bcl-2 ratio in brain tissue. These data indicated that BN augments antioxidant defense with anti-inflammatory and anti-apoptotic activities against HgCl2-induced neurotoxicity and provides

evidence that it has a therapeutic potential as neuroprotective agent. © 2015 Springer Science+Business Media New York

Author Keywords
Berberine; Mercuric chloride; Neuroprotection; Neurotoxicity; Rats

Abdelhalim, S.M.
Children literature based program for developing EFL primary pupils' life skills and language learning strategies
(2014) *English Language Teaching*, 8 (2), pp. 178-195.

Helwan University, Egypt

Abstract
This study examines the effectiveness of a proposed English language program based on integrating two forms of children literature, mainly short stories and songs, in developing the needed life skills and language learning strategies of primary school students. Besides, it emphasized the importance of providing EFL fifth year primary students with activities and opportunities to raise their awareness of their learning, as it helped students understand how to plan, monitor and evaluate their learning. The study targeted ten life skills distributed under four main categories: cognitive, personal, social and linguistic skills. Ninety fifth grade primary students participated in the present study. Five instruments were used: the needed life skills and language learning strategies checklists, a criterion for selecting the stories and songs, the pre/post life skills measures (situation test, questionnaire, oral interpersonal communication test), language learning strategies questionnaire and the students' satisfaction/dissatisfaction questionnaire. The program was taught over a period of two months (two sessions per week). Data collected were analyzed using quantitative and qualitative methodology. Qualitative methods were used to assess students' development over the 8 weeks. Results revealed that life skills and language learning strategies can be taught effectively through the medium of children literature. As a whole, this study contributed to the ESL/EFL field by providing information about the importance of skill building for life at young age and that fundamental changes needed for language instruction. Furthermore, the study presents a detailed teaching strategy for teaching life skills through children literature. © 2015 Canadian Center of Science and Education. All rights reserved.

Author Keywords
Children literature; Learning strategies; Life skills

Abutaleb, M.M.
A new static differential design style for hybrid SET–CMOS logic circuits
(2015) *Journal of Computational Electronics*, 12 p. Article in Press.

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Abstract
Single electron transistors (SETs) have ultra-small size, ultra-low power dissipation and unique Coulomb blockade oscillation characteristics which make them promising candidates for future technologies. However, SETs have extremely poor driving capabilities, low gain and background charges effect so that direct application to practical circuits is as yet almost impossible. A hybridization of existing CMOS technology with SETs is to overcome SET drawbacks and to investigate the robustness and fastness of the novel design in comparing with existing CMOS technology. The main objectives of this paper are to establish standard design styles for hybrid SET–CMOS logic circuits, and to propose a new static differential design style with superior performance at room temperature. This paper provides new SET–CMOS logic gates based on the differential design style, and also demonstrates the comparative performance study of full-adder circuits based on various SET–CMOS design styles. The comparison shows that the proposed differential logic circuit achieves a greater significance performance upon other SET–CMOS logic circuits. The final conclusion is made that the differential SET–CMOS style is more attractive design methodology for next generation VLSI/ULSI circuits. © 2015 Springer Science+Business Media New York

Author Keywords
CMOS; Hybridization; SET; SET modeling and simulation; SET–CMOS logic styles and circuits

Fahmy, A.A.[a] [b] , Abdel Ghany, A.M.[b]
Adaptive functional-based neuro-fuzzy PID incremental controller structure
(2015) *Neural Computing and Applications*, 26 (6), pp. 1423-1438.

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Abstract
This paper presents an adaptive functional-based neuro-fuzzy PID incremental controller structure that can be tuned either offline or online according to required controller performance. First, differential membership functions are used to represent the fuzzy membership functions of the input–output space of the three-term controller. Second, controller rules are generated based on the discrete proportional, derivative, and integral functions for the fuzzy space. Finally, a fully differentiable fuzzy neural network is constructed to represent the developed controller for either offline or online controller parameter adaptation. Two different adaptation methods are used for controller tuning, offline method based on controller transient performance cost function optimization using bees algorithm and online method based on tracking error minimization using back-propagation with momentum algorithm. The proposed control system was tested to show the validity of the controller structure over a fixed PID controller gains to control SCARA® type robot arm. © 2015, The Natural Computing Applications Forum.

Author Keywords
Adaptive control; Bees algorithm; Fuzzy systems; Neuro-fuzzy PID controllers; Neuro-fuzzy systems; Optimization techniques

Document Type: Article

Ghany, H.A.[a] [b] , Elagan, S.K.[a] [c] , Hyder, A.[d]
Exact travelling wave solutions for stochastic fractional Hirota-Satsuma coupled KdV equations
(2015) *Chinese Journal of Physics*, 53 (4), art. no. 080705, .

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Abstract
A modified fractional sub-equation method is used for constructing exact travelling wave solutions of nonlinear stochastic fractional partial differential equations. The main idea of this method is to take full advantage of the fractional Riccati equation, which has many exact solutions. Moreover, white noise functional solutions are obtained for the Wick-type stochastic fractional Hirota-Satsuma coupled KdV equations via Hermite transform and white noise analysis. These solutions include stochastic exponential decay, soliton, and periodic wave solutions. © 2015 The Physical Society of The Republic of China.

Document Type: Article

Kasture, M.[a] , Jadhav, S.[a] , Fouad, H.[b] [c] , Gosavi, S.[a]
Detection of melamine and urea in milk and milk products using graphene/gold nano-composite
(2015) *Sensor Letters*, 13 (6), pp. 471-474.

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Abstract
According to the reports of Indian Council of Medicine milk adulteration has lead to series of health problem like

kidney failure and even death in many cases. Here we report a rapid and simple method for detection of melamine and urea. Melamine and urea are chemical compounds. Melamine is used in production of melamine resins which have potential applications in laminates, glues, adhesives and plastics while urea is being used in fertilizers and many other chemical industries. Both the compounds are nitrogen rich and are frequently added to milk and milk products and also in the infant feeds. Excess addition of melamine and urea is fatal and can lead to death. Here we report the procedure to detect melamine and urea using functionalized graphene-gold nanocomposite. Initially graphene oxide was synthesized using Hummer's method while graphene-gold nano-composite was synthesized by borohydride reduction of Graphene oxide and Choloauric acid mixture. Detection of melamine was supported by TEM, Raman Spectroscopy. Copyright © 2015 American Scientific Publishers.

Author Keywords
Gold; Graphene; Melamine; Milk adulteration; Nano-Composite; Urea

Ibrahim, I.A.M.[a] [b] , Lenčéš, Z.[a] , Benco, L.[a] [c] , Šajgalík, P.[a]
Ab initio study of the electronic structure and band gaps of Eu-doped LaSi$_3$N$_5$ phosphors: A role of oxygen atom
(2015) *Journal of the European Ceramic Society*, 35 (12), pp. 3249-3253.

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Abstract
Ab initio calculations of the electronic structure and band gap of Eu-doped LaSi$_3$N$_5$ were carried out using HSE06 functional. The calculated band gaps of Eu3+- and Eu2+-doped LaSi$_3$N$_5$ are 0.68eV and 3.28eV respectively, with electronic transition p→4f for the former and 4f→5d for the latter system. In the case of Eu2+-doped LaSi$_3$N$_5$ the charge balance caused by La3+/Eu2+ substitution was compensated by N3-/O2-substitution. The band gaps of Eu2+-doped LaSi$_3$N$_5$ were also calculated as a function of the EuO distance. The band gap decreases from ~3.3eV to ~2.9eV with the increase of the EuO distance from ~2.5Å to ~3.9Å. Moreover, the oxygen content was increased by creation of La vacancy compensated by three N3-/O2- substitutions. The calculations showed that with increasing oxygen and vacancy content in the cell of LaSi$_3$N$_5$ and Eu3+ or Eu2+-doped LaSi$_3$N$_5$ the band gaps decreased by 0.2-0.6eV. © 2015 Elsevier Ltd.

Author Keywords
Band gap; Electronic structure; EuO distance; Hybrid functional HSE06; Lanthanum silicon nitride

Ahmed, H.H.[a] , Shousha, W.G.[b] , El-Mezayen, H.A.[b] , El-Toumy, S.A.[c] , Ramadan, A.R.[b]
Updates on the biochemical and molecular mechanisms of N-nitrosodiethylamine-induced hepatocellular carcinoma: Promising therapeutic role of Punica granatum peel extract
(2015) *International Journal of Pharmaceutical Sciences Review and Research*, 32 (2), art. no. 22, pp. 121-144.

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Abstract
This study was undertaken to elucidate the underlying biochemical and molecular mechanisms in favour of N-nitrosodiethylamine-induced hepatocellular carcinoma. Also, the aim of this work was extended to explore the efficacy of Punica granatum peel extract in retrogression of hepatocellular carcinoma (HCC) in rats. HCC group experienced significant elevation in the studied biochemical markers in serum paralleled by significant downregulation of ING-3 gene expression level and upregulation of Foxp-1 gene expression level in liver. Moreover, HCC group exhibited remarkable increase in β-catenin, survivin and Ki-67 expression in the liver as shown in the immunohistochemical analysis. Furthermore, histopathological investigation of liver tissue sections of rats in HCC group revealed typical anaplasia. In contrast, the treatment of HCC groups with Punica granatum peel extract resulted in significant depletion in the liver enzymes activity in association with significant reduction in the studied tumor markers and angiogenic markers. Upregulation of ING-3 and downregulation of Foxp-1 gene expression level in liver have been also detected

due to treatment of HCC groups with Punica granatum peel extract. Furthermore, these groups displayed marked decrease in β-catenin, survivin and Ki-67 expression in the liver. Interestingly, treatment with Punica granatum peel extract elicited marked improvement in the histological feature of liver tissue of HCC groups. In conclusion, the present study indicated that the carcinogenic potency of N-nitrosodiethylamine targeted multiple systems on the cellular and molecular levels. Also, the present findings shed light on the promising anticancer activity of Punica granatum peel extract in recession of hepatocellular carcinoma induced chemically in the experimental model through its antiangiogenic, apoptotic and antiproliferative effciency. © 2015, Global Research Online. All rights reserved.

Author Keywords
Angiogenesis; Apoptosis; Hepatocellular carcinoma; Proliferation; Punica granatum; Tumor markers

Rezayat, A.[a] , El-Kafafy, M.[a c d] , Maes, K.[b] , Lombaert, G.[b] , Vanlanduit, S.[a e] , Guillaume, P.[a]
Estimation of localized dynamic loads by means of sparse optimization
(2015) *6th International Operational Modal Analysis Conference, IOMAC 2015*, .

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Abstract
The identification of system parameters using forward approaches is not always practical due to the rising complexity of modern structures, leaving no chance for direct parameter measurements. In contrast to forward methods, inverse techniques have been gaining popularity, since the advent of high performing computers. This approach consists of the computation of input parameters of a system, with known output data and the system model. When the number of equations (sensors) becomes lower than the amount of unknowns (input parameters), or when the condition number of the system is high, the problem does not have a unique solution. The system becomes under-determined and highly sensitive to input perturbations. The discrete force identification problem in mechanics consists of estimating the applied force locations and their corresponding time history based on measured structural responses. In this article, the applicability of a recently proposed force identification technique (G-FISTA) will be tested using a real-life measurement on a footbridge. This iterative algorithm promotes structured sparsity in the force vector. This algorithm creates a new mathematical setting for the inverse problem, and then solves it using a mixed cost function of group-penalized least squares. This study shows that the location and time history of discrete forces applied on a footbridge can be correctly estimated using the proposed technique.

Author Keywords
Load identification; Model updating; Operational modal analysis; Structured sparsity

Eldeberky, Y.
Applicability of a stochastic model to nonlinear shoaling of surface waves
(2015) *Coastal Engineering Journal*, 57 (2), art. no. 1550002, .

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Abstract
This paper examines the applicability of a stochastic model for the propagation of random waves in shallow water including triad near-resonance interactions. The model is derived from evolution equations for complex Fourier amplitudes of fully dispersive multi-directional waves. The closure used in the stochastic equations is adopted from the theory of weak turbulence based on the assumption of quasi-normal sea state. In the model formulation, the second- and third-order wave statistics are formulated by evolution equations for the wave energy spectrum and bispectrum. These equations are implemented numerically, for the case of unidirectional waves, to compute the evolution of the wave energy spectrum and the bispectrum. Experimental measurements for random wave transformation over a shoal (submerged bar) are compared against the numerical-model results. The stochastic model accurately predicted the wave spectra and third-order statistics, in regions where the Ursell number is smaller than 1.5. For larger Ursell-number values, the stochastic model tends to over-estimate the content of high-frequency

energy, and the skewness and asymmetry, compared to its deterministic counterpart. © 2015 World Scientific Publishing Company and Japan Society of Civil Engineers.

Author Keywords
dispersive waves; harmonic generation; Nonlinear waves; stochastic model; triad interactions

El-Tamimi, A.M.[a] , Nasr, E.A.[b] , Al-Ahmari, A.[a] , Kaid, H.[a] , Li, Z.[c]
Evaluation of deadlock control designs in automated manufacturing systems
(2015) *IEOM 2015 - 5th International Conference on Industrial Engineering and Operations Management, Proceeding*, art. no. 7093819, .

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Abstract
Petri nets are an effective way to model, analyze, and control deadlocks in automated manufacturing systems (AMS). There are three important criteria in designing and evaluating a liveness-enforcing supervisor for a system to be controlled: behavioral permissiveness, structural complexity, and computational complexity. A maximally permissive supervisor can lead to high utilization of system resources. A supervisor with a simple structure can decrease the hardware and software costs. As for the computational complexity, means that a deadlock control policy can be applied to large systems. The objective of this paper is to design liveness-enforcing supervisors for different flexible manufacturing systems, simulate the controlled systems, and estimate the utilization of resources and throughput of the system. The siphon control methods (Strict Minimal Siphons and Elementary Siphons) are used to solve the deadlock control problems for a number of AMSs with different sizes. Moreover, the paper aims to evaluate the performance of selected methods such as utilization of resources, throughput, and the number of monitors, arcs, and states. Finally, the computational results indicate that the elementary siphons based policy provides better structural complexity and computational complexity than the strict minimal siphons based policy. However, strict minimal siphons based policy leads to better behavioral permissiveness than elementary siphons methods. © 2015 IEEE.

Author Keywords
automated manufacturing system; Deadlock prevention; Matlab software; Petri net; Simulation; Siphon

Anwar, M.M.[a] , El-Haggar, R.S.[b c] , Zaghary, W.A.[b d]
Salmeterol Xinafoate
(2015) *Profiles of Drug Substances, Excipients and Related Methodology*, . Article in Press.

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Abstract
Salmeterol xinafoate is a potent and a long-acting β2-adrenoceptor agonist. It is prescribed for the treatment of severe persistent asthma and chronic obstructive pulmonary disease. Different methods were used to prepare (R)-(-)-salmeterol such as: mixing a sample of 4-benzyloxy-3-hydroxymethyl-ω-bromoacetophenone with sodium lauryl sulfate and the mixture was added to the microbial culture of Rhodotorula rubra, treatment of p-hydroxyacetophenone with Eschenmoser's salt and carbonate exchange resin followed by a sequence of supported reagents and scavenging agents or via Rh-catalyzed asymmetric transfer hydrogenation. The enantioselective synthesis of (S)-salmeterol was achieved via asymmetric reduction of the azidoketone 4 by Pichia angusta yeast. Physical characteristics of salmeterol xinafoate were confirmed via: X-ray powder diffraction pattern, thermal analysis and UV, vibrational, nuclear magnetic resonance, and mass spectroscopical data. Initial improvement in asthma control may occur within 30min following oral inhalation of salmeterol in fixed combination with fluticasone propionate. Clinically important improvements are maintained for up to 12h in most patients. It is extensively metabolized in the liver by hydroxylation, thus increased plasma concentrations may occur in patients with hepatic impairment. © 2015 Elsevier

Inc.

AbdelSalam, S.S.[a] , Baligh, F.A.[b] , El-Naggar, H.M.[c]
A database to ensure reliability of bored pile design in Egypt

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[c] Housing and Building National Research Centre, Dokki, Cairo, Egypt

Abstract
A new electronic database has been developed to house reliable results for more than 318 load tests of largediameter bored piles in Egypt, including comprehensive records of soil profile, in situ tests and pile characteristics. Using information from the database, the load and resistance factor design reliability-based calibration approach was applied to established pile design methods and another two local methods. Resistance factors were developed using the Monte Carlo simulation, covering several nominal capacity determination criteria from the pile load–displacement response. The analysis was then extended to assess the reliability of the load test results, which represent the key construction control measure for bored piles. This was achieved by connecting the number of load tests conducted per-site basis with an indicative level of soil variation. © 2015 Emerald Group Publishing Ltd. All rights reserved.

Konrad, A.[a] , Gad, M.[b] , Tilp, M.[a]
Effect of PNF stretching training on the properties of human muscle and tendon structures

[a] Institute of Sports Science, Graz University, Graz, Styria, Austria
[b] Helwan University, Cairo, Egypt

Abstract
The purpose of this study was to investigate the influence of a 6-week proprioceptive neuromuscular facilitation (PNF) stretching training program on the various parameters of the human gastrocnemius medialis muscle and the Achilles tendon. Therefore, 49 volunteers were randomly assigned into PNF stretching and control groups. Before and after the stretching intervention, we determined the maximum dorsiflexion range of motion (RoM) with the corresponding fascicle length and pennation angle. Passive resistive torque (PRT) and maximum voluntary contraction (MVC) of the musculo-articular complex were measured with a dynamometer. Muscle-tendon junction (MTJ) displacement allowed us to determine the length changes in tendon and muscle, and hence to calculate stiffness. Mean RoM increased from $31.1 \pm 7.2°$ to $33.1 \pm 7.2°$ (P=0.02), stiffness of the tendon decreased significantly in both active (from 21.1 ± 8.0 to 18.1 ± 5.5N/mm) and passive (from 12.1 ± 4.9 to 9.6 ± 3.2N/mm) conditions, and the pennation angle increased from $18.5 \pm 1.8°$ to $19.5 \pm 2.1°$ (P=0.01) at the neutral ankle position (90°), only in the intervention group, whereas MVC and PRT values remained unchanged. We conclude that a 6-week PNF stretching training program increases RoM and decreases tendon stiffness, despite no change in PRT. © 2014 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd.

Garbie, I.H.[a] [b]
Sustainability awareness in industrial organizations
(2015) *Procedia CIRP*, 26, pp. 64-69.

[a] Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman
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Abstract
The main goal of this paper is to explore new an approach to measure the degree or percentage of sustainability awareness in industrial organizations. This evaluation was be conducted through in-depth interviews with main stakeholders and the assessment approach was developed in theoretical concept and its applicability was directly tested in one small and medium-sized industrial organization. The designed questionnaire will be distributed among stakeholders and the collected data will be analyzed and discussed individual and aggregated. A real life case study will be used to illustrate the proposed approach of estimating the degree of awareness, and the new assessment approach can be used as a template to assess the current state of awareness in industrial organizations. The results show that the awareness of sustainability is different from one stakeholder to another. © 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license.

Author Keywords
Assessment; Awareness; Sustainability

Document Type: Conference Paper
Source: Scopus

Atta, A.M.[a] [b] , El-Mahdy, G.A.[a] [c] , Al-Lohedan, H.A.[a] , El-saeed, A.M.[b] , Tawfeek, A.M.[d]
Electrochemical behavior of self-assembly monodisperse nanogels based on poly (vinyl alcohol)/poly (acrylic acid) semi-interpenetrating networks
(2015) *International Journal of Electrochemical Science*, 10 (4), pp. 3584-3599.

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Abstract
A new class of monodisperse water-soluble nanogels was prepared by a simple and green method. Semi-interpenetrating nanogels based on poly (vinyl alcohol), PVA, and poly(acrylic acid), PAA, nanoparticles. PAA was prepared by crosslinking of acrylic acid (AA) in the presence of hydroxypropylcellulose (HPC), N,N-methylenebisacrylamide (MBA) as a crosslinker and potassium peroxydisulfate (KPS) as redox initiator system. PVA nanoparticles were prepared by crosslinking in divinyl sulfone via changing the water and acetone compositions. PVA/PAA nanogel was prepared using epichlorohydrin as crosslinker. The structure and morphology of the nanogel was characterized by Fourier transform infrared spectroscopy (FTIR), transmission and scanning electron microscopy (TEM and SEM). The particle size of the prepared nanogel was determined by dynamic light scattering (DLS) measurements. The corrosion protection effect of PVA/PAA nanogel on the steel surface in 1M HCl solution was investigated using potentiodynamic polarization and electrochemical impedance spectroscopy (EIS). Polarization curves indicate that PVA/PAA nanogel is a mixed type inhibitor affecting both cathodic and anodic corrosion currents. The diameter of the capacitive loop increases substantially with increasing PVA/PAA nanogel concentration indicating that the corrosion resistance of steel has been enhanced significantly. The investigated inhibitor has shown good inhibition efficiency in 1 M HCl. The inhibition efficiency, calculated from impedance results showed the same trend as those obtained from potentiodynamic polarization measurements. © 2015 The Authors.

Author Keywords
Corrosion inhibition; Monodisperse; Poly (vinyl alcohol); Poly(acrylic acid); Potentiodynamic polarization; Semi-interpenetrating nanogels

Document Type: Article
Source: Scopus

Ghany, H.A.[a] , Alharthi, M.R.[b] , Al Osaimi, A.[b]
The indefinite moment problem on Euclidean spaces
(2015) *International Journal of Mathematical Analysis*, 9 (21-24), pp. 1149-1157.

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Abstract

This paper is devoted to study the indefinite moment problem on the Euclidean Rn,n∈N. We obtain many properties of the positive definite function nspaces, Rn,n∈N. Moreover, we give abundant properties of the integral ∫<inf>R</inf>n xm dμ(x), x∈Rn where m = m<inf>1</inf>+...+m<inf>n</inf>, x = (x<inf>1</inf>,..., x<inf>n</inf>) and xm=x<inf>1</inf>m<inf>1</inf>...x<inf>n</inf>mn Also, we give many relations between the class of positive definite functions and the class of moment functions. Detailed computations and many applications on the indefinite moment problem and positive definite functions are shown. © 2015 Hossam A. Ghany, Muteb R. Alharthi and Ahmed Al Osaimi.

Author Keywords

Abd Elrahman, M.K.
Fully optimised charge simulation method by using particle swarm optimisation
(2015) *IET Science, Measurement and Technology*, 9 (4), pp. 435-442.

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Abstract

Electric field intensity can be determined analytically, experimentally and numerically. Charge simulation method (CSM) is one of the most commonly used numerical methods for its many characteristics features. It can be used stand alone or in combination with other numerical methods. Sometimes optimisation techniques are used to facilitate the locating of the simulating charges as well as their values. Several optimisation techniques have emerged in the past decades that mimic biological evolution. The most representative techniques include genetic algorithms (GA) and particle swarm optimisation (PSO). Although PSO is more computationally efficient than GA, the later was used frequently to develop optimised versions of CSM during the last two decades. On the other hands, PSO technique was used recently only once to optimise the location of the simulating charges. In this study, the combination process between PSO and CSM became more convenient by optimising both charge locations and their values. This work eliminates the problems that were associated with the last trial and increases the degree of freedom that leads to solutions that are more realistic. The validity of the proposed method was verified by comparison with the analytical and numerical solutions. © The Institution of Engineering and Technology 2015.

Osman, S.M.[a] , Abd El-Khalik, S.M.[b] , El-Haddad, A.E.[a] , Wink, M.[c]
A new steroidal compound (β-sitosterol-3-O-butyl) isolated from Caesalpinia gilliesii flowers
(2015) *International Journal of Applied Research in Natural Products*, 8 (2), pp. 14-19.

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Abstract

The study aimed to evaluate the cytotoxic activity of total extracts from leaves, flowers and pods of Caesalpinia gilliesii (Fabaceae, Caesalpinoideae). In addition, a detailed phytochemical investigation of flower extracts was carried out to isolate and elucidate the structures of the bioactive compounds. Flower extract was the most cytotoxic against MCF7 and HepG2 cancer cells with IC<inf>50</inf> values of 10 and 15.6 μg/mL, respectively. A new β-sitosterol-3-O-butyl was isolated from dichloromethane fraction of flowers together with another known sterol (daucosterol), and two flavonoids (isorhamnetin and isorhamnetin 3-O-rhamnoside). β-sitosterol-3-O-butyl was the most active compound against both HepG2 and MCF7 cells with IC<inf>50</inf> values of 13.1 and 14.4 μg/mL, respectively. Isorhamnetin possesses a moderate antioxidant activity with an IC<inf>50</inf> value 370 μg/mL as determined by DPPH radical scavenging assay. Industrial relevance. β-sitosterol-3-O-butyl and the other phytosterols are responsible for the

cytotoxicity of the extracts which would correlate with the known abortifacient, antimalarial and anthelmintic properties, which can provide a cheap alternative drug. © 2008-2015.

El-Morsy, A.-W.[a] [b] , Farahat, A.I.Z.[c]
Effect of aging treatment on the damping capacity and mechanical properties of Mg-6Al-1Zn alloy
(2015) *Scientific World Journal*, 2015, art. no. 170458, .

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Abstract
The damping capacity and mechanical properties of Mg-6Al-1Zn alloy after heat treatment were investigated. The damping characteristics of un-heat-treated, solution treated, and aged Mg-6Al-1Zn specimens were determined by measuring the damping ratio and the logarithmic decrement of free vibrations of a bending beam clamped at one side. The microstructural evaluations confirmed that the β-Mglphase was reprecipitated after aging and increased with an increase in aging time. The peak level of damping ratio and logarithmic decrement was obtained after 34 hr of aging time, over which the damping capacity declined according to increasing amount of strong pining points. © 2015 Abdel-Wahab El-Morsy and Ahmed I. Z. Farahat.

El-Ashmawy, K.L.A.[a] [b]
A comparison between analytical aerial photogrammetry, laser scanning, total station and global positioning system surveys for generation of digital terrain model
(2015) *Geocarto International*, 30 (2), pp. 154-162.

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Abstract
The present paper compares between four data sources for creating digital terrain models (DTMs), based on analytical aerial photogrammetry, laser scanning, total station (TS) and global positioning system surveys. The case study presents the comparative results obtained using the methods listed above. After obtaining the ground coordinates of points using each method, DTMs were created using Surfer Software to establish comparison consistency. To check accuracy of each method used, a series of 100 independent points were collected at random positions over the case study area using the TS for horizontal position and a digital level for elevation. The comparison of the results of the methods was performed based on accuracy and efficiency aspects. The results have shown that TS and terrestrial laser scanners (TLSs) could represent precise, effective and rapid solutions to produce economical and accurate DTMs. Also, using TLSs allow more various possibilities of data representation. © 2014, © 2014 Taylor & Francis.

El Morsy, E.M., Kamel, R.
Protective effect of artichoke leaf extract against paracetamol-induced hepatotoxicity in rats

Department of Pharmacology and Toxicology, Faculty of Pharmacy, Helwan University, Ein Helwan, Cairo, Egypt

Abstract

Context: Paracetamol overdose is a predominant cause of hepatotoxicity in both humans and experimental animals. Objective: In this study, we investigated the protective effect of aqueous artichoke leaf extract (ALE) against paracetamol-induced liver injury in rats using N-acetylcysteine (NAC) as a reference drug. Materials and methods: Rats were divided into five groups: negative control, paracetamol (2g/kg, single oral dose), ALE (1.5g/kg, orally for 14d), ALE+paracetamol, and NAC (100mg/kg)+paracetamol. Indices of liver damage (serum alanine aminotransferase and aspartate aminotransferase) were measured. Liver homogenates were analyzed for oxidative stress biomarkers (MDA, malondialdehyde; SOD activity, superoxide dismutase activity; NO, nitric oxide; GSH content, reduced glutathione), glutathione cycling (GR, glutathione reductase), and utilization (GST, glutathione-S-transferase). Apoptosis was assessed using the comet assay. Results: Paracetamol caused marked liver damage as noted by significant increased activities of serum aminotransferases ($p<0.05$) as well as a significant increase in hepatic MDA and NO levels ($p<0.001$) compared with the negative control group. GSH content, GR, GST, and SOD activities were decreased significantly ($p<0.001$). Comet assay parameters (tail length, percentage of tailed cells, percentage of migrated DNA, and tail moment) were increased ($p<0.05$), indicating apoptosis. Histopathological examination showed necrotic areas. Pre-treatment with ALE replenished hepatic GSH, reversed oxidative stress parameters, DNA damage, and necrosis induced by paracetamol. Discussion and conclusion: These results suggest that ALE may protect from paracetamol-induced liver toxicity via its antioxidant and anti-apoptotic properties. © 2015 Informa Healthcare USA, Inc.

Author Keywords
Apoptosis; Glutathione; N-acetylcysteine; Oxidative stress

Document Type: Article
Source: Scopus

Elnakish, M.T.[a b c] , Ahmed, A.A.E.[c] , Mohler, P.J.[a b] , Janssen, P.M.L.[a b]
Role of oxidative stress in thyroid hormone-induced cardiomyocyte hypertrophy and associated cardiac dysfunction: An undisclosed story

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Abstract

Cardiac hypertrophy is the most documented cardiomyopathy following hyperthyroidism in experimental animals. Thyroid hormone-induced cardiac hypertrophy is described as a relative ventricular hypertrophy that encompasses the whole heart and is linked with contractile abnormalities in both right and left ventricles. The increase in oxidative stress that takes place in experimental hyperthyroidism proposes that reactive oxygen species are key players in the cardiomyopathy frequently reported in this endocrine disorder. The goal of this review is to shed light on the effects of thyroid hormones on the development of oxidative stress in the heart along with the subsequent cellular and molecular changes. In particular, we will review the role of thyroid hormone-induced oxidative stress in the development of cardiomyocyte hypertrophy and associated cardiac dysfunction, as well as the potential effectiveness of antioxidant treatments in attenuating these hyperthyroidism-induced abnormalities in experimental animal models. © 2015 Mohammad T. Elnakish et al.

Document Type: Review
Source: Scopus

Elbashbeshy, E.M.A.[a] , Emam, T.G.[a] , El-Azab, M.S.[b] , Abdelgaber, K.M.[c]
Effect of thermal radiation on flow, heat, and mass transfer of a nanofluid over a stretching horizontal cylinder embedded in a porous medium with suction/injection

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[b] Department of Physics and Engineering Mathematics, Faculty of Engineering, Mansoura University, Mansoura, Egypt

[c] Department of Physics and Engineering Mathematics, Faculty of Engineering - Mataria, Helwan University, Cairo, Egypt

Abstract

The effect of thermal radiation on flow, heat, and mass transfer of an incompressible viscous nanofluid over a stretching horizontal cylinder embedded in a porous medium with suction/injection is discussed numerically. The governing boundary layer equations are reduced to a system of ordinary differential equations. Mathematica has been used to solve such system after obtaining the missed initial conditions. Comparison of obtained numerical results is made with previously published results in some special cases and found to be in good agreement. © 2015 by Begell House, Inc.

Author Keywords

Boundary layer; Laminar flow; Nanofluid; Stretching horizontal cylinder; Suction/injection; Thermal radiation

Metwaly, M.S.[a c] , Dkhil, M.A.[a b] , Al-Quraishy, S.[a] , Al Omar, S.Y.[c]
Protective effects of palm pollen aqueous extract against Eimeria papillata induced intestinal damage in mice

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Abstract

Coccidial infections are known to cause cytotoxicity and oxidative damage within intestinal tissues in their hosts. The current work was designed to study the protective effects of palm pollen aqueous extract (PPE) against Eimeria papillata-induced intestinal damage in mice. Coccidiosis was induced in male albino mice via oral inoculation with 1.5×10^3 sporulated E. papillata oocysts. Infected mice were administered PPE as daily dose of 150 mg/kg for five successive days. On day 5 p.i., animals were scarified and jejunum samples were prepared for paraffin embedded histological sections and jejunal homogenate was used for determination of oxidative damage biomarkers. The data show that E. papillata infection in mice induced marked histological alterations within jejunum tissue in the form of inflammation, vacuolation of the epithelium and destruction of some villi with concurrent decrease in goblet cell number. Upon treatment of infected mice with PPE, the histological injury score within infected jejunum tissue was reduced by 60% and goblet cell number was significantly restored near its control values. Also, the results showed that E. papillata induced a state of oxidative damage and disturbance in antioxidant system within jejunum tissue. The infection enhanced lipid peroxidation and protein oxidation processes as evidenced by the significant increase in hydrogen peroxide, malondialdehyde and protein carbonyl contents. The antioxidant enzymes, catalse and glutathione peroxidase were decreased in their activities as a consequence of the infection with concurrent reduction in reduced glutathione level and total antioxidant capacity within infected jejunum tissue. Moreover, mediators of nitric oxide pathway of inflammation (tumor necrosis factor-α, inducible nitric oxide synthase and nitric oxide) were significantly increased after infection. Collectively, treatment of E. papillata infected mice with PPE led to reduction in lipid peroxidation and protein oxidation processes, with concurent decrease in the activities of mediators of nitric oxide pathway of inflammation; in addition to the significant enhancement of the jejunal antioxidant system. Copyright 2015 Zoological Society of Pakistan.

Author Keywords

Cytotoxic damage; Murine coccidiosis; Oxidative damage; Palm pollen extract; Protective activities

Selim, M.Y.E.[a] , Ghannam, M.T.[b] , Aldajah, S.[a] , Saleh, H.E.[c]
The Effect of Temperature and Mixing on the Density and Viscosity of Jojoba-diesel Fuels

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[b] Chemical and Petroleum Engineering Department, UAE University, Al-Ain, United Arab Emirates
[c] Mechanical Power Engineering Department, Faculty of Engineering, University of Helwan, Cairo, Egypt

Abstract

The density and viscosity of several jojoba oil biodiesel-diesel fuel blends (B10, B20, B30, B50, and pure fuels B0 and B100) were measured for almost the first time according to the corresponding ASTM standards. In order to predict these properties, mixing rules are evaluated as a function of the volume fraction of biodiesel in the blend and also to check the validity of the mixing rules. The absolute percentage deviations obtained were low, demonstrating the suitability of the used mixing rules. The jojoba biodiesel and its blends have slightly higher density and viscosity, however, the kinematic viscosity may be lowered significantly by increasing the temperature of the fuel. The current work presented lacking data for the jojoba biodiesel and its blend with diesel. These data are required for further experimentation of the fuel, or for simulation and modeling purposes. © Taylor & Francis Group, LLC.

Author Keywords
biodiesel; density; diesel engine; jojoba; mixing rule; viscosity

Document Type: Article
Source: Scopus

Awadalla, M., Konsowa, H.
Performance enhancement of multicore architecture
(2015) *International Journal of Electrical and Computer Engineering*, 5 (4), pp. 669-684.

Electrical and computer engineering department, SQU, Oman Communications, Electronics and Computers Department, Faculty of Engineering, Helwan University, Cairo, Egypt

Abstract

Multicore processors integrate several cores on a single chip. The fixed architecture of multicore platforms often fails to accommodate the inherent diverse requirements of different applications. The permanent need to enhance the performance of multicore architecture motivates the development of a dynamic architecture. To address this issue, this paper presents new algorithms for thread selection in fetch stage. Moreover, this paper presents three new fetch stage policies, EACH-LOOP-FETCH, INC-FETCH, and WZ-FETCH, based on Ordinary Least Square (OLS) regression statistic method. These new fetch policies differ on thread selection time which is represented by instructions' count and window size. Furthermore, the simulation multicore tool, is adapted to cope with multicore processor dynamic design by adding a dynamic feature in the policy of thread selection in fetch stage. SPLASH2, parallel scientific workloads, has been used to validate the proposed adaptation for multi2sim. Intensive simulated experiments have been conducted and the obtained results show that remarkable performance enhancements have been achieved in terms of execution time and number of instructions per second. produces less broadcast operations compared to the typical algorithm. Copyright © 2015 Institute of Advanced Engineering and Science. All rights reserved.

Author Keywords
Fetch policy; Multi2sim; Multicore; Ordinary Least Square (OLS); Pipeline processor

Document Type: Article
Source: Scopus

Attia, M.K.[a] [b]
Sustainability in Saudi vernacular built environment: The case of Al-Ahsa
(2015) *Vernacular Architecture: Towards a Sustainable Future - Proceedings of the International Conference on Vernacular Heritage, Sustainability and Earthen Architecture*, pp. 87-92.

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Abstract

Without knowing its comprehensive meaning, sustainability has been one of the most fundamental and important features of Saudi vernacular built forms. Traditional Saudi builders have developed different techniques that promote sustainability such as the sensitive selection of sites, integrated distribution of uses, adaptation to hot climate and utilizing renewable building materials; socio-cultural believes and economic situations are further dimensions of sustainable development that have not been overlooked. The present paper attempts to portray sustainability inherited in the vernacular built forms of the Eastern Province of Saudi Arabia with special concern to Al-Ahsa. The paper provides an insight on criteria and design issues associated with the sustainability of Al-Ahsa vernacular architecture. Design criteria and considerations for sustainable performance are illustrated and concluded to identify guidelines for effective and environmentally friendly contemporary designs. Vernacular design principles are of great benefit to current professionals to achieve designs that fulfil both local identity and sustainability. © 2015 Taylor & Francis Group.

Document Type: Conference Paper
Source: Scopus

Ali, O.[a] , Osman, H.H.[a] , Sayed, S.A.[a] , Shalabi, M.E.H.[b]
The removal of uranium and thorium from their aqueous solutions via glauconite
(2015) *Desalination and Water Treatment*, 53 (3), pp. 760-767.

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Abstract
The sorption behavior of uranium and thorium from their aqueous solutions by local Egyptian Bahariya oases glauconite has been investigated by batch technique. The parameters that affect the sorption of uranium and thorium on glauconite such as pH, contact time, their initial concentration, glauconite mass and temperature have been studied. Sorption experiments were expressed by Langmuir and Freundlich isotherms and the results demonstrated that the sorption of uranium and thorium on glauconite correlated well with Freundlich isotherm. Kinetics studies showed that the sorption followed pseudo first order kinetic model with an activation energy (Ea) of 8.8 kJ/mol. Thermodynamic parameters such as $\Delta H°$, $\Delta S°$ and $\Delta G°$ indicated that the sorption of uranium and thorium on glauconite was endothermic. © 2013, © 2013 Balaban Desalination Publications. All rights reserved.

Author Keywords
Glauconite; Sorption; Thorium; Uptake; Uranium

Document Type: Article
Source: Scopus

Hashim, F.A., Salem, N.M., Seddik, A.F.
Optic disc boundary detection from digital fundus images
(2015) *Journal of Medical Imaging and Health Informatics*, 5 (1), pp. 50-56.

Department of Biomedical Engineering, Faculty of Engineering, Helwan University, Helwan, Cairo, Egypt

Abstract
Optic disc (OD) detection is an important step in automatic segmentation and analysis of retinal images. In this paper, a new methodology for boundary detection of the OD from colour fundus retinal images is proposed. Morphological operators and contrast enhancement techniques are used in conjunction with the difference of Gaussian (DOG) filter to obtain the boundary of the OD. Our proposed algorithm achieves a high success rate with a comparable computational time. The performance of our proposed method has been evaluated on 1660 images representing six publicly available datasets; STARE, DRIVE, ARIA, DIARETDB1, DIARETDB0, and MESSIDOR datasets. Experimental results show that a 100% success rate for images from DRIVE, ARIA, DIARETDB1, and DIARETDB0 datasets; which is better than the of state-of-the-art methods with accuracy less than 99% for ARIA, DIARETDB1, and DIARETDB0 datasets. While achieving 98.8% and 99.83% for STARE and MESSIDOR datasets respectively, the algorithm runs with an average computational time of 1.2 seconds. © 2015 American Scientific Publishers All rights reserved.

Author Keywords
Difference of gaussian filter; Optic disc detection; Optic disc segmentation; Retinal image analysis

Document Type: Article
Source: Scopus

Hegazy, O.[a] [b] , El Baghdadi, M.[a] , Van Mierlo, J.[a] , Lataire, P.[a]
Modeling and analysis of different control techniques of conductive battery chargers for electric vehicles applications
(2015) *COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 34 (1), pp. 151-172.

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Abstract
Purpose - The purpose of this paper is to analyze and simulate the control techniques that can be used to control the on-board conductive battery chargers (OCBCs) for electric vehicles applications. This paper also provides a comparative study of these control techniques. Design/methodology/approach - Battery chargers would play an important role in the development of new battery electric vehicles (BEVs). The control techniques of these OCBCs can significantly influence the BEV performance during the charging mode from the ac grid. In addition, the proper selection of control systems of the OCBCs has a great impact on the power quality of the AC grid during the charging period. Therefore, this paper presents the analysis of different control techniques that are commonly used to control the battery chargers. In addition, a comparative study of different control techniques of the OCBCs for BEVs is provided. Findings - The results have demonstrated that it is possible to significantly improve the efficiency, power factor and total harmonic distortion by using proportional-integral control and proportional-resonant control. The digital control can be used to validate the selected control technique. Originality/value - The main objective of this paper is to analyze the different control methods that can be used to control the OCBCs during charging mode from the ac grid. In addition, this paper presents a comparative analysis between these control methods. In this paper, a digital control based on TMS320F2808 DSP is used to implement the proper control method for OCBCs. © Emerald Group Publishing Limited.

Author Keywords
Control systems; Electric converters; Energy transport; Power devices; PWM

Abdelhady, M.I.S.[a] [c] , Bader, A.[a] , Shaheen, U.[a] [d] , El-Malah, Y.[b] [e] , Abourehab, M.A.S.[b] [f] , Barghash, M.F.[g]
Azadirachta indica as a source for antioxidant and cytotoxic polyphenolic compounds
(2015) *Biosciences Biotechnology Research Asia*, 12 (2), pp. 1209-1222.

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Abstract
Cancer is a life threatening malignant tumor, caused by many factors including the oxidative stress. Medicinal plants containing phenolic compounds represent an important source of antioxidant and anticancer drugs. Azadirachta indica Family: Meliaceae contains variety of bioactive components of numerous biological and pharmacological properties. This study explored the constitutive polyphenols of Azadirachta indica (A. indica) growing in KSA and evaluated its antioxidant and cytotoxic activity. Chemical structures of the isolated compounds from the leaves of A. indica were established by spectral techniques (UV, MS, 1H, and 13C NMR, and two dimentional NMR). The colourimetric assay (SRB) used to evaluate the cytotoxicity against HCT116, MCF7 and Hep-G2 cell lines. Chromatographic separation of 80% Ethanol extract of the leaves of A. indica have resulted in seven polyphenolic compounds three of them isolated for the first time from this species (2,3-(S)-hexahydroxydiphenoyl-(/)-D-glucopyranose, Avicularin and Castalagin) and four known previously isolated compounds (Gallic acid, Ellagic acid, Quercetin and Quercetin-3-O-glucoside). The 80% Ethanol extract exhibited higher antioxidant activity than the ethyl acetate and butanol extracts, which is correlated with its phenolic content. The ethanolic extract, compounds 4 and 6 exhibited cytotoxic activity against HCT116, MCF7 and Hep-G2. These findings revealed that the leaves of A. indica contains a considerable amount of polyphenolic compounds with significant antioxidant and cytotoxic activity, consequently it could be considered as a great potential source for natural health products.

Author Keywords
Cytotoxic and antioxidant activities.; Neem; Polyphenolic compounds

Al-Olayan, E.M.[a] , El-Khadragy, M.F.[a] [b] , Abdel Moneim, A.E.[b]
The protective properties of melatonin against aluminium-induced neuronal injury
(2015) *International Journal of Experimental Pathology*, 96 (3), pp. 196-202. Cited 1 time.

a Department of Zoology, Faculty of Science, King Saud University, Riyadh, Saudi Arabia
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Abstract

Aluminium (Al) toxicity is closely linked to the pathogenesis of Alzheimer's disease (AD). This experimental study investigated the neuroprotective effect of melatonin (Mel; 10 mg/kg bwt) on aluminium chloride ($AlCl_3$; 34 mg/kg bwt) induced neurotoxicity and oxidative stress in rats. Adult male albino Wistar rats were injected with $AlCl_3$ for 7 days. The effect on brain structure, lipid peroxidation (LPO), nitric oxide (NO) levels, glutathione (GSH) content, antioxidant enzymes (SOD, CAT, GPx and GR), apoptotic proteins (Bax and Bcl-2) and an apoptotic enzyme (caspase-3) was investigated. No apparent changes occurred following the injection of melatonin. Melatonin pretreatment of the $AlCl_3$-administered rats reduced brain damage, and the tissues appeared like those of the control rats. Compared to treatment with $AlCl_3$, pretreatment with melatonin decreased LPO and NO levels and increased the GSH content and antioxidant enzyme activity. Moreover, melatonin increased the levels of the anti-apoptotic protein, Bcl-2, decreased the levels of the pro-apoptotic protein, Bax, and inhibited caspase-3 activity. Therefore, our results indicate that melatonin may provide therapeutic value against aluminium-induced oxidative stress and histopathological alternations in the rat brain and that these effects may be related to anti-apoptotic and antioxidant activities. © 2015 International Journal of Experimental Pathology.

Author Keywords

Aluminium chloride; Anti-apoptotic; Brain; Melatonin; Oxidant/antioxidant; Rats

Document Type: Article
Source: Scopus

El-Mahdy, G.A.[a b] , Atta, A.M.[a c] , Al-Lohedan, H.A.[a] , Tawfeek, A.M.[d] , Abdel-Khalek, A.A.[e]
Synthesis of encapsulated titanium oxide Sodium 2-Acrylamido-2-methylpropan Sulfonate nanocomposite for preventing the corrosion of steel
(2015) *International Journal of Electrochemical Science*, 10 (7), pp. 5702-5713.

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b Chemistry department, Faculty of Science, Helwan University, Helwan, Egypt
c Petroleum application department, Egyptian petroleum research institute, Nasr city, Cairo, Egypt
d College of Science, King Saud University, Riyadh, Saudi Arabia
e Chemistry department, Faculty of Science, Beni Suef University, Beni Suef, Egypt

Abstract

Poly(Sodium-2-Acrylamido-2-methylpropane) Sulfonate, PNa-AMPS nanocomposite consisting of a nanocrystalline titania matrix was prepared by suspension of the titania particles followed by crosslinking radical polymerization of Na-AMPS monomer. The chemical structure of the prepared nanogel was evaluated by FTIR. The crystallinity, morphology and particle size distribution were characterized by XRD patterns, TEM and DLS analyses. The high corrosion inhibition effectiveness of TiO_2 nanoparticles in chloride containing environment is reported using electrochemical techniques. All measurements showed that TiO_2 nanoparticles had excellent corrosion protection for the corrosion of steel in acidic chloride solution and the protection efficiency is strongly dependent upon inhibitor concentration. Polarization data reveal that TiO_2 nanoparticles act as a mixed-type inhibitor. © 2015 The Authors.

Author Keywords

Corrosion EIS polarization; Inhibition

Document Type: Article
Source: Scopus

Yousef, A.[a b c] , Brooks, R.M.[d] , Abdelkareem, M.A.[b e] , Khamaj, J.A.[e] , El-Halwany, M.M.[b f] , Barakat, N.A.M.[b e] , El-Newehy, M.H.[g] , Kim, H.Y.[b]
Electrospun NiCu nanoalloy decorated on carbon nanofibers as chemical stable electrocatalyst for methanol oxidation
(2015) *ECS Electrochemistry Letters*, 4 (9), pp. F51-F55.

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Abstract

NiCu-carbon nanofibers (CNFs) composite was introduced as electrocatalyst for methanol oxidation. Nanofibers (NFs) were synthesized by calcination of electrospun nanofiber mats composed of nickel (II) acetate tetrahydrate, Copper (II) acetate monohydrate, and polyvinyl alcohol (PVA) in the argon/hydrogen atmosphere at 700°C for 2 hr. The introduced NFs showed a very good ectrocatalytic activity for methanol oxidation as compared tothat of Ni nanoparticles (NPs) and NiCNFs. As the current densities $\sim$110 mA/Cm2, 85 mA/Cm2, and 60 mA/Cm2 for NiCuCNFs nanocomposite, NiCNFs, and Ni NPs, respectively, were obtained. © 2015 The Electrochemical Society.

Document Type: Article
Source: Scopus

Mohamed, N.T.
Ultrastructure of salivary gland of third instar larvae of Chrysomya megacephala (Diptera)
(2015) *International Journal of Pharma and Bio Sciences*, 6 (1), pp. B1220-B1228.

Entomology, Zoology and Entomology Department, Faculty of Science, Helwan University, Egypt

Abstract

The present study revealed the basic structure of salivary gland of third instar larvae of Chrysomya megacephala in order to clarify the source of proteolytic enzymes in the excretory/secretory products of this maggot. The salivary gland of third instar larvae of Chrysomya megacephala possess very well-developed cuticle, numerous rough endoplasmic reticulum with different shapes. Secretory products were observed beneath the cuticle. A large nucleus was observed nearly in the middle of the cell. Very well-developed musculature was seen throughout the cell. Numerous tracheae, mitochondria and other organelles were present throughout the cell. Thin basement membrane was observed with well-developed basal labyrinth that encloses numerous mitochondria. The structure of salivary gland cell of third instars larvae of Chrysomya megacephala indicate that salivary gland is responsible for a great part on the production of most of enzymes in the excretory/secretory products of this maggot.

Author Keywords
Chrysomya megacephala; Maggots; Proteases; Salivary gland

Document Type: Article
Source: Scopus

Gomaa, A.[a] , Abd El Aziz, G.B.[b] , Radwan, M.I.[a]
Performance characteristics of wet air-conditioning cooling coils with different fin patterns
(2015) *Science and Technology for the Built Environment*, 21 (2), pp. 126-136.

DOI: 10.1080/10789669.2014.975092

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[b] Mechanical Engineering Department, Suez University, Suez, Egypt

Abstract

In the present study, the thermal performance and pressure drop characteristics of wet air-conditioning cooling coils are investigated under the hot arid climate of Cairo. The effect of fin patterns, fin pitch, and air velocity on the heat transfer performance of direct expansion cooling coils is presented. Five test specimens of cooling coils are tested involving flat, corrugated, and louvered fins. In addition, different fin pitches are considered for louvered-fin cooling coils. Reynolds number for the air side ranged from 65 to 1200, corresponding to face velocity of 0.43–6.65 m/s. Four methods of performance criteria are presented to interpret how different fin geometries of cooling coils could affect the overall performance of the air-conditioning unit. At a certain value of pressure drop of 50 Pa, the air heat transfer coefficient for louvered fins is higher than that of corrugated and flat fin cooling coils by 29.4% and 47%, respectively. The energy efficiency ratio for louvered fins is higher than that of corrugated and flat fin cooling coils by 9% and 17.4%. The air-conditioning system having a cooling coil with lower fin pitch and enhanced fin surfaces is more energy cost effective. © 2015 ASHRAE.

Document Type: Article

Elsayed, A.M.[a][b] , Saleh, E.I.[a][b]
Measuring the return on investment of academic libraries in Arab countries: a proposed model
(2015) *Information Development*, 31 (3), pp. 219-228.

[a] King Abdulaziz University, Saudi Arabia
[b] Helwan University, Egypt

Abstract
This study provides an initiative for reflecting from a new perspective on academic libraries in Arab countries and their value to the institutions they serve. Depending on the pivotal role of databases in all educational and research activities, the study had two phases; first, demonstrating return on investment based on total downloads by King Abdulaziz University (KAU) faculty and students, which found that researchers would have to pay more than six times as much for articles if they had to purchase them rather than getting them through library databases; and secondly, measuring the usage of 52 funded research report citations drawn from library databases during the year 2011, which found that the return on investment was negative (– 0.99). The study showed that the proposed model can be applied in many Arab academic libraries. © The Author(s) 2013.

Author Keywords
academic libraries; library value; return on investment; Saudi Arabia

Document Type: Article

Khaled, H.[a] , Sayed, S.G.[a][b][c] , Saad, E.S.M.[a] , Ali, H.[a]
Hand gesture recognition using modified 1$ and background subtraction algorithms
(2015) *Mathematical Problems in Engineering*, 2015, art. no. 741068, .

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[c] Egyptian Computer Emergency Readiness Team (EG-CERT), National Telecom Regulatory Authority (NTRA), Cairo, Egypt

Abstract
Computers and computerized machines have tremendously penetrated all aspects of our lives. This raises the importance of Human-Computer Interface (HCI). The common HCI techniques still rely on simple devices such as keyboard, mice, and joysticks, which are not enough to convoy the latest technology. Hand gesture has become one of the most important attractive alternatives to existing traditional HCI techniques. This paper proposes a new hand gesture detection system for Human-Computer Interaction using real-time video streaming. This is achieved by removing the background using average background algorithm and the 1$ algorithm for hand's template matching. Then every hand gesture is translated to commands that can be used to control robot movements. The simulation results show that the proposed algorithm can achieve high detection rate and small recognition time under different light changes, scales, rotation, and background. © 2015 Hazem Khaled et al.

Document Type: Article

Rahouma, A., El-Azab, R., Salib, A., Amin, A.M.A.
Frequency response of a large-scale grid-connected solar photovoltaic plant
(2015) *Conference Proceedings - IEEE SOUTHEASTCON*, 2015-June (June), art. no. 7133004, .

Faculty of Engineering at Helwan, Helwan University, Cairo, Egypt

Abstract
Integrating large scale solar photovoltaic generation plants with electric power systems as a renewable energy source achieve many targets, i.e. economic, environmental and technical. These plants are classified as variable renewable energy sources which have two main attributes; variability and uncertainty. This variable nature poses challenges for an electric grid that has traditionally been powered by traditional generating resources that are relatively stable and

controllable. © 2015 IEEE.

Author Keywords
BESS; frequency stability; grid interia; spinning reserve; SPVG integration

Rahman, M.M.[a b] , Saha, S.[c] , Mojumder, S.[c] , Naim, A.G.[a] , Saidur, R.[d] , Ibrahim, T.A.[e f]
Effect of sine-squared thermal boundary condition on augmentation of heat transfer in a triangular solar collector filled with different nanofluids

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[b] Department of Mathematics, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
[c] Department of Mechanical Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
[d] Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia
[e] Vice Presidency for Projects, King Saud University, Riyadh, Saudi Arabia
[f] Mechanical Power Department, Faculty of Engineering-Mattaria, Helwan University, Cairo, Egypt

Abstract
Numerical study of heat transfer phenomena has become a major field of research nowadays. In engineering applications, different boundary conditions arise which have various effects on heat transfer characteristics. For the present work, a triangular-shape cavity has been analyzed for the sine-squared thermal boundary condition which is common in practical cases. The augmentation of heat transfer has been done by introducing a nanofluid inside the cavity. Different solid volume fractions (φ = 0, 0.05, 0.1, 0.2) of water-CuO, water-Al$_2$O$_3$, and water-TiO$_2$ nanofluid have been tested for the cavity with a wide range of Rayleigh number (Ra = 105-108) and for dimensionless time (τ = 0.1 to 1). The Galerkin weighted residual finite-element method has been applied for the numerical solution, and numerical accuracy has been checked by code validation. The heat transfer augmentation for different nanofluids has been done in the light of local (Nu$_L$) and overall Nusselt number (Nu$_{av}$), and the results have been presented with streamline, isotherm, and related contours, in graphs and charts. It has been found that variable boundary condition has significant effect on flow and thermal fields and increase of solid volume fraction enhances the heat transfer. Copyright © 2015 Taylor & Francis Group, LLC.

Al-Riyami, H.[a] , Al-Busaidi, A.[a] , Al-Nadabi, A.[a] , Al-Siyabi, M.[a] , Al-Abri, M.[a] , Al-Rawahi, Z.[a] , Dubois, J.[b] , Lambillon, V.[b] , Mirza, S.[b] , Bastens, A.[b] , Abdalla, O.H.[c]
Development of demand forecast model for the transmission system master plan of Oman (2014-2030)

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[b] Tractebel Engineering, Belgium
[c] University of Helwan, Egypt

Abstract
The objective of this paper is to present the methodology, approach and results of the demand forecast analysis used in the Transmission Master Plan of Oman 2014-2030. Oman Electricity Transmission Company and Tractebel Engineering analyze the challenges and review the existing load demand forecast studies used in Oman. Different studies analyze load forecasting at short to medium term. A spatialization of the long term load forecast is required in the Transmission Master Plan (2014-2030) of Oman in order to correctly address the transmission expansion plan. Several approaches are proposed to review and challenge existing studies and to spatialize the load demand forecast. The approaches are called global and areabased forecasting methods. Each approach is complimentary and allows to cross-check the adequacy of the method to the peculiarities of the local load demand and the accuracy of the data available. The global method allows linking the electricity consumption to the various economic indicators through mathematical regression relating the electrical energy consumption to socio-economic indicators. The area-based based method aims to spatialize the load forecast taking into account the consumption at regional level and the local characteristics of each area in the Sultanate. The results of the load demand forecast analysis defined the area

with very high growth, the amount of generation required in the firm of the Transmission Master Plan and accordingly the least cost transmission network development plan. © 2015 IEEE.

Author Keywords
Demand Forecast; Long-Term Planning; Master Plan; Transmission System

Document Type: Conference Paper
Source: Scopus

Attallah, A.M.[a] , El-Far, M.[b] , Malak, C.A.A.[c] , Omran, M.M.[d] , Farid, K.[e] , Hussien, M.A.[f] , Albannan, M.S.[a] , Attallah, A.A.[a] , Elbendary, M.S.[a] , Elbesh, D.A.[a] , Elmenier, N.A.[a] , Abdallah, M.O.[a]
Fibro-Check: A combination of direct and indirect markers for liver fibrosis staging in chronic hepatitis C patients
(2015) *Annals of Hepatology*, 14 (2), pp. 225-233.

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[b] Mansoura University, Mansoura, Egypt
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[f] Port-Said University, Port-Said, Egypt

Abstract
Background and rationale for the study. The assessment of liver fibrosis provides useful information not only for diagnosis but also for therapeutic decision. This study was concerned with determining the levels of collagen III and its degrading enzyme matrix metalloproteinase-1 (MMP-1) as direct and complementary markers for liver fibrosis staging. Results. A total of 269 chronic hepatitis C patients constituted this study. Western blotting was used for identifying collagen III and MMP-1 in serum samples. As a result, collagen III and MMP-1 were identified, respectively, at 70 and 245 kDa using their respective mono-specific antibodies. These two markers were quantified in sera of patients using ELISA. Next, Fibro-check was constructed combining collagen III and MMP-1 together with other indirect markers which reflect alteration in hepatic functions that proved useful to stage liver fibrosis. Fibro-check produced area under the receiver-operating characteristic curve (AUC) 0.91 and 0.83 for significant (F2-F4) and cirrhosis (F4), respectively. Additionally, we estimated the performance of Fibro-check in comparison with aspartate to platelet ratio index (APRI) and fibrosis index. Fibro-check seems to be more efficient than both of them. Fibro-check was then applied to the validation study to test its accuracy and reproducibility showing AUCs 0.90 for F2-F4 and 0.86 for F4. Conclusions. Fibro-check combining 'direct' and 'indirect' markers using a mathematical formula may improve the staging of liver fibrosis with a high degree of accuracy and seems more efficient than APRI and Fibrosis index in this group of Egyptian patients. © 2015 Fundacion Clinica Medica Sur. All rights reserved.

Author Keywords
Collagen III; Liver biopsy; Metalloproteinases; Non-invasive

Document Type: Article
Source: Scopus

Ibrahim, M.H.
Secure and robust enterprise digital rights management protocol with efficient storage
(2015) *Information (Japan)*, 18 (2), pp. 625-639.

Department of Electronics, Communications and Computers, Faculty of Engineering, Helwan University, 1, SherifSt., Cairo, P.O. Box, Helwan, Egypt

Abstract
In the digital world, protection against information theft by unauthorized entities is the most demanding services for enterprise business organizations. Although firewalls and intrusion detection systems are able to prevent outsider attacks (i.e. attacks attempted by individuals outside the organization), still insider attackers are the most serious threat. Enterprise Digital Rights Management (E-DRM) are strategies and schemes to protect sensitive information by managing and enforcing access and usage rights to the information throughout its life-cycle, no matter where the information is distributed. Among the recently proposed cryptographic solutions to E-DRM, we noticed several efficiency drawbacks and security weaknesses. In this paper we device a stronger digital rights management protocol for enterprise applications that overcomes the security problems and efficiency drawbacks in previous protocols. Our proposed protocol satisfies the requirements for an E-DRM protocol, provides more efficient and robust storage of large digital packages/files and provides stronger security against corruptive adversaries. Our proposed protocol ensures privacy against the authorization authority and the unauthorized users while reduces the computations and

communications burden of the author, the authorization authority as well as the users. © 2015 International Information Institute.

Abdalla, M.S.[a] , Saad-Hussein, A.[b] , Ibrahim, K.S.[b] , El-Mezayen, H.A.[a] , Osman, N.F.[a]
Effects of smoking on the oxidant/antioxidant balance and the blood lipids in pesticide sprayers

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Abstract
The present study was conducted on 80 pesticide male sprayers (42 nonsmokers and 38 smokers). Our aim was to estimate the smoking effects on blood lipids and oxidant/antioxidant status in pesticide sprayers. Results revealed that cholesterol, low-density lipoprotein (LDL) and glutathion peroxidase (GPx) enzyme were significantly higher in the 38 smoker sprayers than in the 42 nonsmoker sprayers. Cholesterol and LDL were correlated with smoking index and high-density lipoprotein (HDL), superoxide dismutase (SOD) enzyme and zinc (Zn) were inversely correlated with duration of pesticides' exposure. In nonsmokers, LDL and cholesterol were negatively correlated with SOD and correlated with malondialdehyde (MDA), and cholesterol was negatively correlated with Zn. HDL was negatively correlated with MDA in all the sprayers, but was correlated with GPx in smokers and with Zn in nonsmokers. In smokers, LDL was negatively correlated with GPx, HDL was negatively correlated with MDA and triglycerides and very-low-density lipoprotein were negatively correlated with Zn. MDA was negatively correlated with SOD, GPx and Zn. Smoking and pesticide exposure could be responsible for hyperlipidemia and oxidative stress. Therefore, improvement in the antioxidant status is mandatory for pesticide sprayers especially the ones who smoke. © The Author(s) 2012.

Dkhil, M.A.[a][b] , Al-Quraishy, S.[a] , Al-Shamrany, A.[a] , Alazzouni, A.S.[b] , Lubbad, M.Y.[a][c] , Al-Shaebi, E.M.[a] , Taib, N.T.[a]
Protective effect of berberine chloride on Plasmodium chabaudi-induced hepatic tissue injury in mice

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[c] General Directorate of Environmental and Occupational Health, Public Health Agency, Ministry of Health, Riyadh, Saudi Arabia

Abstract
The present study aimed to investigate the protective role of berberine (BER) against Plasmodium chabaudi-induced infection in mice. Animals were divided into three groups. Group I served as a vehicle control. Group II and group III were infected with 1000 P. chabaudi infected erythrocytes. Group III was gavaged with 100. µl of 10. mg/kg berberine chloride for 10. days. All mice were sacrificed at day 10 post-infection. The percentage of parasitemia was significantly reduced more than 30%, after treatment of mice with BER. Infection caused marked hepatic injuries as indicated by histopathological alterations as evidenced by the presence of hepatic lobular inflammatory cellular infiltrations, dilated sinusoids, vacuolated hepatocytes, increased number of Kupffer cells and the malaria pigment, hemozoin. These changes in livers led to the increased histological score. Also, infection induced a significant increase in liver alanine aminotransferase and aspartate aminotransferase and a significant increase in the total leucocytic count. Moreover, mice became anemic as proved by the significant decrease in erythrocyte number and haemoglobin content. BER showed a significant protective potential by improving the above mentioned parameters. Based on these results, it is concluded that berberine could offer protection against hepatic tissue damage. © 2014 The Authors.

Author Keywords

Berberine; Liver; Mice; Plasmodium chabaudi

Document Type: Article
Source: Scopus

Ismail, M.A.[a] , Memon, N.K.[a] , Mansour, M.S.[a b] , Anjum, D.H.[c] , Chung, S.H.[a]
Curved wall-jet burner for synthesizing titania and silica nanoparticles
(2015) *Proceedings of the Combustion Institute*, 35 (2), pp. 2267-2274.

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Abstract

A novel curved wall-jet (CWJ) burner was designed for flame synthesis, by injecting precursors through a center tube and by supplying fuel/air mixtures as an annular-inward jet for rapid mixing of the precursors in the reaction zone. Titanium dioxide (TiO_2) and silicon dioxide (SiO_2) nanoparticles were produced in ethylene (C_2H_4)/air premixed flames using titanium tetraisopropoxide (TTIP) and hexamethyldisiloxane (HMDSO) as the precursors, respectively. Particle image velocimetry measurements confirmed that the precursors can be injected into the flames without appreciably affecting flow structure. The nanoparticles were characterized using X-ray diffraction, Raman spectroscopy, the Brunauer-Emmett-Teller (BET) method, and high-resolution transmission electron microscopy. In the case of TiO_2, the phase of nanoparticles could be controlled by adjusting the equivalence ratio, while the particle size was dependent on the precursor loading rate and the flame temperature. The synthesized TiO_2 nanoparticles exhibited high crystallinity and the anatase phase was dominant at high equivalence ratios ($\varphi > 1.3$). In the case of SiO_2, the particle size could be controlled from 11 to 18 nm by adjusting the precursor loading rate. © 2014 The Combustion Institute. Published by Elsevier Inc. All rights reserved.

Author Keywords
Curved wall-jet burner; Flame synthesis; Silicon dioxide; Titanium dioxide

Document Type: Article
Source: Scopus

Rizk, M.[a] , Attia, A.K.[b] , Elshahed, M.S.[a] , Farag, A.S.[a]
Validated voltammetric method for the determination of antiparkinsonism drug entacapone in bulk, pharmaceutical formulation and human plasma
(2015) *Journal of Electroanalytical Chemistry*, 743, pp. 112-119.

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[b] National Organization for Drug Control and Research, P.O. Box 29, Cairo, Egypt

Abstract

Accurate and precise voltammetric method has been developed and validated for quantitative determination of entacapone in bulk, pharmaceutical dosage forms and human plasma at carbon paste electrode in Britton-Robinson buffer of pH range (2-10) in presence of Triton X-100. Several factors such as pH, type of surfactant, scan rate and accumulation time were investigated in order to study the optimum conditions for determination of entacapone. A good linear relationship was obtained within the concentration range from 1.0×10^{-6} to 3.8×10^{-5} mol L-1 with mean recovery and relative standard deviation values of 100.26% and 1.72%, respectively. The limits of detection and quantification were found to be 1.13×10^{-7} and 3.76×10^{-7} mol L-1, respectively. The obtained results are in good agreement with those obtained by a reference method. The proposed method is simple, rapid and economic, so it is suitable for routine analysis of entacapone in pure form and dosage forms and for pharmacokinetic studies. © 2015 Elsevier B.V. All rights reserved.

Author Keywords
Biological fluids; Carbon paste electrode; Entacapone

Document Type: Article
Source: Scopus

Al Rez, M.F.[a] , Elnakady, Y.A.[b] , Fouad, H.[a c] , Khalil, K.A.[d] , Albarrag, A.M.[e] , Elsarnagawy, T.[f] , Mahmood, A.[e] , Ansari, S.G.[g]

Fabrication and characterization of polycaprolactone micro and nanofibers for vascular tissue replacement

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Abstract

In the present study, 2D micro- and nanofibrous polycaprolactone (PCL) scaffolds were fabricated using the electrospinning technique. The thermal, microstructure and mechanical properties of the fabricated micro- and nanofibrous scaffolds were assessed using structural/phase, elemental, morphological characterizations and micro-universal testing machines. Finally, scaffolds were seeded with fibroblasts to evaluate biological properties and to demonstrate tissue growth. In addition, the toxicity of PCL scaffold on hFFs cells was explored with Live/Dead staining. The morphological characterization of PCL scaffolds showed highly aligned microand nanofibrous morphology with porosity reaches to 66% and uniform diameter ranges from 200 nm to 1.4 µm depending on PCL concentration, solvent and applied voltage. The FTIR results indicated that the micro/nanofibers are almost the same for bulk PCL. The DSC results confirmed the semi-crystalline nature of PCL with crystallinity and temperature melting of microfibrous scaffold higher than that of the nanofibrous ones. The Thermogravimetric analysis showed that the PCL micro- and nanofibers have a single stage thermal degradation with higher decomposition temperature of microfibrous PCL scaffolds compared to the nanofibrous one. The mechanical test results indicated that the microfibrous scaffolds have an acceptable mechanical behavior for cell culture technology. Finally, the cell culture results showed that the cells are not only attached to the scaffold but also integrated with it; the cells are imbedded into the PCL scaffold, which is the ultimate goal of using these kinds of materials for tissue engineering. © 2015 by American Scientific Publishers.

Author Keywords

Document Type: Article
Source: Scopus

Ibrahim, N.A.[a] , Khalil, H.M.[b] , Eid, B.M.[a]

A cleaner production of ultra-violet shielding wool prints

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[b] Faculty of Applied Arts, Printing Dyeing and Finishing Department, Helwan University, Cairo, Egypt

Abstract

There is an urgent need to reduce the environmental impacts of textile wet processes taking in consideration product and environmental quality as well as economic concerns. Substitution of hazardous chemicals at the source and/or shortening the production steps are potential options which could be used to move towards cleaner production process and to cope with ever-increasing demands for eco-friendly textile products. In this research the possibility of enhancing both the ultra-violet shielding and coloration properties of wool fabric in a single-stage using β-cyclodextrin or monochlorotriazinyl β-cyclodextrin as well as certain ultra violet absorbers or blockers as additives to other environmentally benign printing paste components was investigated. The modified one-step coloration and functionalization method, using safer textile auxiliaries, less energy, and water consumption, proved to have positive impacts on the depth of the obtained prints and their fastness properties as well as on their ability to shield the harmful ultra-violet B-radiation without seriously affecting the environment. The enhancement in the imparted properties is governed by type of cyclodextrin, degree of fixation onto/within the wool structure, type and extent of immobilization of the used ultra violet protector, type of dye and its mode of interaction, as well as degree of interactions among the nominated printing paste components and the wool active sites during the steam fixation step. The imparted ultra-violet protection properties to the modified wool prints show obviously improved durability to wash compared to the

Author Keywords
Cyclodextrins; Eco-friendly wool prints; Nanoparticles; Printing; Single stage process; UV-protectors

Document Type: Article
Source: Scopus

Almusallam, T.H.[a] , Elsanadedy, H.M.[a b] , Al-Salloum, Y.A.[a]
Effect of longitudinal steel ratio on behavior of RC beams strengthened with FRP composites: Experimental and FE study

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[b] Dept. of Civil Engineering, Helwan Univ., Cairo, Egypt

Abstract
This study experimentally and numerically investigates the effect of longitudinal steel ratio on the flexural performance of RC beams externally strengthened with fiber-reinforced polymer (FRP) composites. The experimental program consisted of testing 11 beams under four-point bending until failure. Each beam was duplicated to verify the repeatability of the results. Three beams were tested as control specimens; the remaining eight beams were externally strengthened in flexure with FRP composites. The primary experimentally studied parameters were longitudinal steel ratio and axial FRP stiffness. Three different steel ratios were examined. For the lowest steel ratio, four different FRP systems with six axial stiffness values were investigated. However, for the other two steel ratios, only one FRP system was studied. In addition to the experimental program, a numerical study utilizing nonlinear finite-element (FE) analysis was conducted. As a result of the numerical study, new FRP stiffness and reinforcement parameters were introduced in this research. These parameters were used in the categorization of failure modes of FRP-upgraded beams. © 2014 American Society of Civil Engineers.

Author Keywords
Concrete beams; Fiber reinforced polymer; Finite-element modeling; Flexural strengthening

Document Type: Article
Source: Scopus

Elsayed, H.E.[a b] , Akl, M.R.[a] , Ebrahim, H.Y.[a] , Sallam, A.A.[a] , Haggag, E.G.[b] , Kamal, A.M.[b] , El Sayed, K.A.[a]
Discovery, optimization, and pharmacophore modeling of oleanolic acid and analogues as breast cancer cell migration and invasion inhibitors through targeting Brk/Paxillin/Rac1 axis

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[b] Department of Pharmacognosy, Faculty of Pharmacy, Helwan University, Helwan Cairo, Egypt

Abstract
Bioassay-guided fractionation of Terminalia bentzoe L. leaves methanol extract identified the known triterpene oleanolic acid (1) as its major breast cancer cell migration inhibitor. Further chemical optimization afforded five new (9-12 and 15) and seven known (4-8, 13, and 14) semisynthetic analogues. All compounds were tested for their ability to inhibit human breast cancer MDA-MB-231 cells migration, proliferation, and invasion. The results revealed that 3-O-[N-(3-chlorobenzenesulfonyl)-carbamoyl]-oleanolic acid (11) and 3-O-[N-(5-fluorobenzenesulfonyl)-carbamoyl]-oleanolic acid (12) were the most active hits at low μm concentration. Western blot analysis indicated the activity of 1, 11, and 12 might be related, at least in part, to the suppression of Brk/Paxillin/Rac1 signaling pathway. Pharmacophore modeling study was conducted to better understand the common structural binding epitopes important for the antimigratory activity. The sulfonyl carbamoyl moiety with an optimal bulkiness electron-deficient phenyl ring is associated with improved activity. This study is the first to discover the antimigratory and anti-invasive activities of oleanolic acid and analogues through targeting the Brk/Paxillin/Rac1 axis. © 2014 John Wiley & Sons A/S.

Author Keywords
bioassay-guided; breast cancer; Brk/Paxillin/Rac1 axis; Combretaceae; oleanolic acid; T erminalia bentzoe L

Document Type: Article
Source: Scopus

Ali, S.H.R.[a], Zahwi, S.Z.A.[a], Dadoura, H.H.[b]
Proposed Metrological Method for Identifying Automotive Brake Discs

[a] National Institute for Standards (NIS), Egypt
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Abstract
The main aim of this work is to develop an identification method to demonstrate the crucial surfaces of automotive braking system. Two brand new brake discs manufactured by two different manufacturers are tested. A typical disc to the one of them was put under working condition in actual braking system. Dimensional and geometrical deviations are investigated using advanced engineering metrological technique. Mechanical properties, tribological characteristics and chemical analyses are investigated. A coordinate measuring machine, universal hardness tester, mass comparator and XRF spectrometer are used in these diagnoses. Measurements of dimensional and geometrical deviations such as disc thickness variations, thickness deviations, straightness, parallelism, runout of disc surfaces are conducted. A comparison between form deviations in disc surfaces have been carried out and analyzed. The effect of material properties of the influencing surfaces on the wear rate and hardening of surfaces has been discussed. Wear rate under severe sliding conditions is thus strongly influenced by the geometrical and hardness characteristics. The wear rate of used brake disc rotor induced fatigue phenomena is accurately identified. Correlations between design specifications and real surface characteristics are evaluated. The results showed that implementation of the engineering metrology techniques to understand and predict the dynamic behaviors for auto brake discs are necessary successful. Moreover, repeatability of the measurement results is conducted to confirm their precision. Copyright © 2015 SAE International.

Document Type: Article
Source: Scopus

Abouel-Seoud, S.A.
Influence of road roughness parameters on low frequency interior noise in off-road and mid-size passenger vehicles

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Abstract
In this paper, assessment and evaluation of vehicle low frequency interior noise, infrasound closer to the threshold of hearing and their potential effects on human health are presented. The vehicle interior noise of off-road and mid-size vehicles was measured while driving on three different asphalt road surfaces. The results indicate that the vehicle acoustic comfort factor (VACF) should be at lower level for a relatively high acoustical comfort. Furthermore, at constant vehicle speed, the kurtosis parameter value is greater in high roughness road surface and is proportional to vehicle speed for every kind of road surface. Kurtosis has inverse effect on the VACF value. The VACF for road surface with higher roughness is lesser than the VACF for smoother road surface at same vehicle speeds. © 2015. MechAero Foundation for Technical Research & Education Excellence.

Author Keywords
Low frequency sound; Noise and vibration; Road index; Vehicle acoustic comfort factor; Vehicle speed

Document Type: Article
Source: Scopus

Morsy, M.E.[a] [b], Achtenová, G.[a]
Value of autocorrelation analysis in vehicle gearbox fault diagnosis

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[b] Faculty of Engineering, Helwan University, Cairo, Egypt

Abstract

This article presents value of autocorrelation analysis in vehicle gearbox fault diagnosis. Autocorrelation algorithm is a mathematical tool for finding repetitive patterns, such as finding the presence of a periodic signal which has been buried under noise or identifying the missing fundamental frequency in a signal implied by its harmonic frequencies. The paper intends to apply the autocorrelation analysis for detection of an artificial pitting defect in vehicle gearbox at different operation conditions. The test stand is equipped with three dynamometers; the input dynamometer serves as internal combustion engine, the output dynamometers introduce the load on the flanges of output joint shafts. The pitting defect is manufactured on the one tooth side of the fifth speed pinion on the output shaft. The procedures are illustrated with the experimental vibration data of real vehicle gearbox. The results show the effectiveness of autocorrelation analysis for detection and diagnosis of the gear condition under different operating conditions. Copyright © 2015 Inderscience Enterprises Ltd.

Author Keywords
Autocorrelation algorithm; Gear fault diagnosis; Gear pitting; Vehicle gearbox; Vibration measurement

Fouad, D.[a][b]
Molecular modeling and phylogeny of the manganese superoxide dismutase from the camel, Camelus dromedarius

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[b] Department of Zoology and Entomology, Faculty of Science, Helwan University, Ein Helwan, Cairo, Egypt

Abstract
The manganese superoxide dismutase (MnSOD or SOD2) is an important antioxidant enzyme in mammals as it eliminates the reactive oxygen species (ROS) produced by the aerobic reactions. The one-humped camel (Camelus dromedarius) is adapted to live in the widely varying arid climate and in many intrinsic and extrinsic ROS producing agents. Studying the MnSOD in C. dromedarius could help understand the impact of exposure to such factors on the health status of camel. The coding sequence of MnSOD of C. dromedarius (cSOD2) was amplified by reverse transcription PCR from the liver. The cDNA sequencing revealed an open reading frame of 666 nucleotides encoding a protein of 222 amino acids which is comparable to the SOD2 genes from many eukaryotic organisms. The calculated molecular weight and isoelectric point of cSOD2 were 24.6 kDa and 8.15, respectively. The amino acid sequence analysis revealed the presence of the mitochondria targeting sequence at the N-terminus, the conservation of the characteristic MnSOD motif signature and the four manganese binding sites in cSOD2. The alignment and phylogenetic analysis of the cSOD2 with sequences from 18 organisms indicated that cSOD2 groups with mammals which took late evolutionary line different from SOD2 from birds, amphibians, fish and invertebrates. Copyright 2015 Zoological Society of Pakistan.

Author Keywords
Anti-oxidant enzyme; Manganese superoxide dismutase; One-humped camel; Reactive oxygen species; Superoxide dismutase

Dawoud, M.
Investigations on the transfer of porphyrin from o/w emulsion droplets to liposomes with two different methods

Department of Pharmaceutics, Faculty of Pharmacy, Helwan University, Cairo, Egypt

Abstract
Context: Due to their small particle size, colloidal fat emulsions are suitable for intravenous administration. In order to obtain information on their potential in vivo performance, it is important to find a simple and effective in vitro assay to evaluate the drug release behavior of such particles. Objective: Two in vitro methods were studied to measure the transfer of a lipophilic model drug from colloidal o/w emulsion droplets (donor) to liposomes (acceptor), which serve as model membranes mimicking cell membranes in the body. In the first method (column method) the acceptor particles were neutral unilamellar vesicles. In the second method (MLV method), multilamellar vesicles (MLV) were used as acceptor. Materials and methods: The donor nanoemulsions were prepared by high pressure homogenization. Z-average particle size, polydispersity index and zeta potential were determined. Results: The transfer of porphyrin was moderate to the acceptor MLV and rapid to the acceptor unilamellar vesicles. The amount of transferred porphyrin at the end of the experiment depended on the transfer method and the donor/acceptor ratio.

With both acceptors the transfer of porphyrin stopped at a concentration lower than the theoretical equilibrium values. Discussion: Many factors such as acceptor particle size and donor to acceptor lipid molar ratio affect the drug transfer from the donor particles to the different acceptors. Conclusion: Both methods seem to be suitable to study the drug transfer from such colloidal emulsion and the use of lipophilic acceptor particles is a better approach to the conditions in blood. © 2015 Informa Healthcare USA, Inc. All rights reserved.

Author Keywords
Acceptor vesicles; Centrifugation; Drug transfer; Ion-exchange columns; Nanoemulsion

Document Type: Article
Source: Scopus

El-Garhy, A.M.[a] , El-Shimy, M.E.[b]
BELBIC for MRAS with highly non-linear process
(2015) *Alexandria Engineering Journal*, 54 (1), pp. 7-16.

DOI: 10.1016/j.aej.2014.12.001

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Abstract
Model Reference Adaptive Systems (MRASs) use mostly the traditional MIT rule based controllers to drive the difference (error) between the model reference signal and actual output one to zero value. MIT rule based controllers are slow and cause large error values in case of highly non-linear process. In this paper, we propose the Brain Emotional Learning Based Intelligent Controller (BELBIC) to replace the MIT rule based one. BELBIC benefits Brain Emotional Learning modeled algorithm in mammalians brain to seek the proper control signal that eliminates the error. In spite of some overshoots in MRAS with BELBIC, simulation of the proposed BELBIC for MRAS with its large number of adjustable gains achieves remarkable fast response. © 2015 Faculty of Engineering, Alexandria University. Production and hosting by Elsevier B.V.

Author Keywords
Brain Emotional Learning Based Intelligent Controller (BELBIC); MIT rule based controllers; Model Reference Adaptive System (MRAS); System dynamics

Document Type: Article
Source: Scopus

Kamrani, A.[a] , Azimi, M.[b] , Nasr, E.A.[c d]
Predictive modeling of tumors using RP
(2015) *IEOM 2015 - 5th International Conference on Industrial Engineering and Operations Management, Proceeding*, art. no. 7093789, .

DOI: 10.1109/IEOM.2015.7093789

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[c] College of Engineering, Industrial Engineering Department, King Saud University, Riyadh, Saudi Arabia
[d] Mechanical Engineering Department, Helwan University, Cairo, Egypt

Abstract
The primary objective of radiotherapy is to deliver the correct dose of radiation to cancerous region with minimum damage to surrounding normal tissues in head and neck. Based on pre-treatment Computer Tomography (CT) images, a master plan for the treatment is developed. The current radiation therapy planning systems 'assume' that the tumor geometry will not change during the course of treatment. However, there is a critical flaw in this assumption, because tumor geometry has shown to be changing over time during the treatment. Accordingly, there is a critical need to track the changes in tumor geometry over time during the radiotherapy treatment, and then plan the proper treatment and radiation. We proposed a methodology to geometrically model, physically construct, monitor and predict daily (fraction day) tumor volume and surface changes of head and neck cancer tumors during the entire radiation therapy period. Tumor volume and surface are calculated using patients' CT scan data and tested using both geometrical analysis and physical models using 3D printing technologies. Geometrical and Statistical analyses are applied in order to generate the predictive models and validation. © 2015 IEEE.

Author Keywords
3D technology; Prediction model; Regression analysis; Tumor deformation

Document Type: Conference Paper
Source: Scopus

Badr, S.E.A.[a] , El Reffaei, W.H.M.[a] , Abd El-Aziz, A.S.E.[b] , Abdelfattah, M.S.[b]
Rheological studies and effect of feeding guar (Cyamopsis tetragonoloba L.) seeds on histology of some organs of the albino rats
(2015) *American Journal of Food Technology*, 10 (1), pp. 26-36.

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Abstract
In this study, the rheological properties of composite flour and their guar meal blends were studied by faringography. The water absorption percent, arrival time, development time, dough stability, mixing tolerance, ash, protein, falling number, baking strength, index of swelling and extensibility were estimated. The effect of feeding guar seeds powder on liver enzymes (GOT and GPT) and kidney functions (urea and creatinine) of rats were investigated. The results showed that diets with 5% guar seeds powder had the best effect on GOT (17.7 U L-1), GPT (22.2 U L-1), urea (26.0 mg dL-1) and creatinine (0.83 mg dL-1). Histopathological studies were also carried out in the kidney and liver of the albino rats. © 2015 Academic Journals Inc.

Author Keywords
Guar seeds powder; Histopathology; In vivo; Liver and kidney functions; Rheology

Document Type: Article
Source: Scopus

Dkhil, M.A.[a b] , Alazzouni, A.S.[b] , Al-Quraishy, S.[a] , Al-Shamrany, A.[a] , Lubbad, M.Y.[a c] , Al-Shaebi, E.M.[a] , Taib, N.T.[a]
Berberine protects against murine malaria-induced spleen tissue damage
(2015) *Biomedical Research (India)*, 26 (2), pp. 333-337.

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Abstract
Malaria is one of the most severe public health problems worldwide. Here, we investigated the ameliorative role of berberine against Plasmodium chabaudi-induced spleen injury. Mice were divided into 3 groups. The first group served as a vehicle control, the second group was infected with 103 P. chabaudi infected erythrocytes and the third group was infected with P. chabaudi then treated with 10 mg/kg berberine for 10 days. Berberine was significantly able to lower the percentage of parasitemia. The infection induced splenomegaly and spleen injury. This was evidenced by fused splenic white pulp areas, diffuses appearance of the marginal zones, and increased number of macrophages in the red pulp. These changes in spleen led to the increased histological score. Berberine treatment caused a marked improvement in the splenic architecture and could offer protection against spleen tissue injury. Further studies are required to know the mechanism of berberine action against murine malaria. © 2015, Scientific Publishers of India. All rights reserved.

Author Keywords
Berberine; Malaria; Mice; Spleen

Document Type: Article
Source: Scopus

Elgindi, M.R.[a] , Abd alkhalik, S.M.[b] , Melek, F.R.[c] , Hassan, M.A.[d] , Abdelaziz, H.S.[e]
Saponins isolated from Polyscias guilfoylei F. Araliaceae
(2015) *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 6 (3), pp. 545-549.

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Abstract

The saponins are chemical compounds present in several plants that have a different biological activity. This study based on the importance of these compounds in traditional medicine. Three saponins were isolated by chromatographic methods (CC, PC, PTLC and HPLC) from Polyscias guilfoylei. The isolated compounds identified by 1HNMR, 13CNMR and HMQC as: 3-O-[β-D-glucopyranosyl (1→3) β-D-glucuronopyranosyl-6'-methyl ester] oleanolic acid-28-O-methyl ester, 3-O- β-D- glucuronopyranosyl-6'-methyl ester oleanolic acid - 28-O - β - D - glucopyranosyl and 3-O-[β-D-glucopyranosyl (1→3) β-D-glucuronopyranosyl-6'- methyl ester] oleanolic acid - 28-O - β - D - glucopyranosyl ester. It is the first time to separate compounds 1, 2 and 3 from genus Polyscias.

Author Keywords
Araliaceae; Polyscias guilfoylei; Saponins; Triterpene

Hassan, H.A., Salem, S.A., Mostafa, A.M., Saad, E.M.
C24. Harmonic semi-partitioning scheduling algorithm for multi-core real-time systems

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Abstract

In this paper, a new semi-partitioning scheduling algorithm for muli-core real time system is proposed. The proposed algorithm is called Harmonic Semi-Partitioning and Task Splitting (HSPTS) which uses the Rate-Monotonic approach to address the problem of scheduling periodic tasks with implicit deadlines on multi-core systems. Two challenges have been addressed and resolved by the proposed algorithm, the first is to find the set of tasks which have harmonic relations with each other. While the second challenge is to assign and split the appropriate tasks among different processors without overrun. In this context, the overall utilization for multi-core systems will be improved and exceed the Liu&Layland's boundary for N tasks. To this extent, the suitable task pairs are assigned to processors using hyperbolic boundary. Experimental results show that the developed algorithm enhances not only the overall system utilization but also the number of processors needed to schedule multi-core real-time systems compared with other competitive algorithms. © 2015 IEEE.

Author Keywords
Multi-core processors; Semi-partition approach; Static scheduling

Moneim, A.E.A.
Oxidant/antioxidant imbalance and the risk of Alzheimer's disease

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Abstract

Alzheimer's disease (AD) is the most common form of dementia characterized by progressive loss of memory and other cognitive functions among older people. Senile plaques and neurofibrillary tangles are the most hallmarks lesions in the brain of AD in addition to neurons loss. Accumulating evidence has shown that oxidative stress–induced damage may play an important role in the initiation and progression of AD pathogenesis. Redox impairment occurs when there is an imbalance between the production and quenching of free radicals from oxygen species. These reactive oxygen species augment the formation and aggregation of amyloid-β and tau protein hyperphosphorylation and vice versa. Currently, there is no available treatments can modify the disease. However, wide varieties of antioxidants show promise to delay or prevent the symptoms of AD and may help in treating the disease. In this review, the role of oxidative stress in AD pathogenesis and the common used antioxidant therapies for AD will summarize. © 2015 Bentham Science Publishers.

Author Keywords
Alzheimer's disease; Antioxidants; Oxidative stress

Document Type: Article
Source: Scopus

El-Azab, R., Amin, A.
Optimal solar plant site selection
(2015) *Conference Proceedings - IEEE SOUTHEASTCON*, 2015-June (June), art. no. 7132992, .

DOI: 10.1109/SECON.2015.7132992

Faculty of Engineering at Helwan, Helwan University, Cairo, Egypt

Abstract
Energy sector problems are likely to become more urgent in an environment of limited community financial sources and precarious production environment. These conditions reinforce the encouragements of dealing with energy efficiency and diversification of energy resources in some countries. The growth in energy consumption is a response to the economic growth, industrialization, and growing demands in citizen's lifestyle. Therefore, innovative solutions for energy resources become an essential need. This paper reviews the solar energy's current status in the Middle East and North Africa. It also proposes an algorithm for optimizing solar plants site selection. The solar plant sites are normally located in remote areas that characterized by high sun radiations. Unfortunately, those areas could be far from the load centers. So, those remote sites will definitely suffer from higher transmission losses than sites that are close the load centers. The proposed optimization algorithm will be applied to both Photo Voltaic (PV) and Concentrated Solar Power (CSP) plants. © 2015 IEEE.

Author Keywords
CSP; planning; PV; solar energy; transmission losses

Document Type: Conference Paper
Source: Scopus

Kashid, S.[a], Kumar, S.[a], Hussein, H.M.[b c]
Selection, modeling and prediction of life of stripper of compound die
(2015) *Key Engineering Materials*, 639, pp. 501-508.

DOI: 10.4028/www.scientific.net/KEM.639.501

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Abstract
Compound dies are widely used for production of pierced blanks with high accuracy. Stripper is one of the major components of a compound die. In this paper, research work involved in the selection, modeling and prediction of life of stripper of compound die is presented. Knowledge based system (KBS) approach is used for selection of size of stripper. The knowledge base is constructed through coding of production rules of IF-THEN variety in AutoLISP language. Further, a CAD system is developed for automatic modeling of stripper of compound die. This CAD system works in conjunction with the KBS developed for selection of stripper. An artificial neural network (ANN) model is developed for prediction of life of stripper. Various factors affecting life of stripper are investigated through FEM analysis and the critical simulation values are determined. The proposed ANN model is trained by using FEM simulation results. The proposed work is tested successfully on different sheet metal parts taken from stamping industries. A sample run is also demonstrated in this paper. © (2015) Trans Tech Publications, Switzerland.

Author Keywords
CAD; Knowledge based system; Sheet metal

Document Type: Conference Paper
Source: Scopus

Nour, M.[a], Hosny, O.[b], Elhakeem, A.[c]
A BIM based approach for configuring buildings' outer envelope energy saving elements
(2015) *Journal of Information Technology in Construction*, 20, pp. 173-192.

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Abstract
This study introduces a novel approach to configuring buildings' outer envelopes with the objective of optimizing Life Cycle Cost. This approach is based on the assumption that not all building elements constituting the outer envelope are subjected to the same amount of thermal transmission losses or solar radiation. Therefore, an optimization approach based on segmenting external facades and roofs into independent objects in a building information model was developed. A Genetic Algorithm is coupled with Industry Foundation Classes, an Energy Simulation software tool and a Life Cycle Cost estimation model to achieve an optimal allocation of energy saving elements to buildings' external envelopes, the use of which allows for a positive return on additional investment in energy saving elements. The developed approach is applied to a case study of a desert building in Egypt. The paper also investigates the influence of Egyptian energy prices subsidization policy relevant to energy saving costs using the case study. © 2015 The authors.

Author Keywords
BIM; Energy; Genetic algorithm; Life cycle cost; Optimization; Segmentation

Document Type: Article
Source: Scopus

Yousef, A.[a b c] , El-Halwany, M.M.[b d] , Barakat, N.A.M.[c] , Al-Maghrabi, M.N.[e] , Kim, H.Y.[c]
Cu^0- doped TiO$_2$ nanofibers as potential photocatalyst and antimicrobial agent
(2015) *Journal of Industrial and Engineering Chemistry*, 26, pp. 251-258. Cited 1 time.

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Abstract
Cu^0 nanoparticles (NPs)-doped TiO$_2$ nanofibers (NFs) were prepared as an effective photodegradation of three azo dyes as well as an antimicrobial agent under visible light. Fabrication of one dimensional zero-valent Cu nanoparticles-doped TiO$_2$ nanofibers with high aspect ratio have been successfully synthesized by simple and low cost; electrospinning technique followed by hydrothermal process. The photocatalytic activity of introduced nanofibers was evaluated by performing of three azo dyes. Catalytic NFs show a superior photodegaradation activity under visible light as well as good antimicrobial activity. Moreover, photocatalyst nanofibers appeared good stability, which was used for three cycles without regeneration. © 2014 The Korean Society of Industrial and Engineering Chemistry.

Author Keywords
Azo dye; E. coli; Electrospinning; Hydrothermal; Metallic copper-titania nanofibers

Document Type: Article
Source: Scopus

Michael, A.P.[a] , Mostafa, A.[b c] , Cooper, J.M.[d] , Grice, J.[c] , Roberts, M.S.[c e] , Isbister, G.K.[d]
The pharmacokinetics and pharmacodynamics of severe aldicarb toxicity after overdose
(2015) *Clinical Toxicology*, 53 (7), pp. 633-635.

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Abstract
Objective. To describe the clinical effects, pharmacokinetics, and pharmacodynamics of plasma and acetylcholinesterase in an aldicarb overdose. Case Report. A 57-year-old female was found unconscious and incontinent of urine after ingesting aldicarb. She was bradycardic, hypotensive, hypersalivating, clammy, had small

pupils, and generalized weakness. She was intubated, ventilated, and treated with large atropine doses (50 mg and 20 mg/h infusion) and adrenaline. She improved hemodynamically over 24 h, but remained comatose for another 24 h, before recovering without sequela. Aldicarb concentration at admission was 2.18 µg/ml and concentration-time data best fitted a two compartmental model with first order absorption and a time of ingestion 4.5 h preadmission. The half-life of distribution was 0.4 h and half-life of elimination, 13 h. Plasma cholinesterase concentration at admission was 0.3 kU/L (Reference range[RR]:4.3-10.6 kU/L) and red cell cholinesterase was 10 U/gHb (RR:38-66 U/gHb). The IC<inf>50</inf> was 0.15 µg/ml and 0.26 µg/ml for plasma and red cell cholinesterase, respectively. Discussion. Aldicarb poisoning causes rapid onset severe toxicity with muscarinic and nicotinic excess, seizures, and decreased consciousness. Cholinesterases rapidly recover once aldicarb concentrations decrease and precede clinical recovery. © 2015 Informa Healthcare USA, Inc.

Author Keywords
Carbamate; Other; Pharmacokinetics; Respiratory support

Labeeb, N.S.[a] , Hamdy, A.[b] , Badr, I.A.[a] , El Sanabary, Z.[c] , Mossa, A.M.[a] , Khattab, R.[d]
Automatic classification of the severity level of the retinal ischemia

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Abstract
When the blood vessels stop supplying any region in the retina of the eye, this region is called capillary non-perfusion (CNP). With increasing and spreading of these regions across the retina, the patient can go blind. These regions appear only in the fundus fluorescein angiograms (FFAs). In this paper, an algorithm to automate the segmentation and classification of these regions is presented. The segmentation algorithm consists of three main steps: pre-processing, vessels extraction and CNP segmentation. After that, the automatic classification is applied to determine the severity level of each image. In the segmented algorithm, the CNPs are extracted by using the region growing algorithm. The algorithm is tested on 88 FFA images and evaluated by using two different ground truth images. The severity level is classified based on the percentage of the CNPs in each image. © 2015, WSEAS TRANSACTIONS on BIOLOGY and BIOMEDICINE, All rights Reserved.

Author Keywords
Capillary non-perfusion; Classification; Ischemia segmentation; Region growing; Retinal ischemia

Elgemeie, G.H.[a] , Ahmed, K.A.[b] , Ahmed, E.A.[a] , Helal, M.H.[a] , Masoud, D.M.[a]
Microwave synthesis, photophysical properties of novel fluorescent iminocoumarins and their application in textile printing

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[b] Dyeing Printing and Textile Auxiliaries Department, Textile Industries Division, National Research Centre, Dokki, Cairo, Egypt

Abstract
Purpose - This paper aims to synthesise coumarine flourescent dyes from a cheap material in a very short time with a very high yield, and by using a clean green chemistry. Design/methodology/approach - Efficient microwave synthesis for some novel iminocoumarins starts from the reaction of p-phenyl-enediamine and ethyl cyanoacetate followed by cyclocondensation with salicylaldehyde derivatives. Findings - The synthesized iminocoumarine compounds were characterized by spectroscopic methods. Absorption and fluorescence spectra of the compounds were also recorded. All compounds were fluorescent in 1,4-dioxane solution, they all emitted blue light (440-460 nm). The printing properties were studied, and their applications on printing polyester and polyamide fabrics were studied by silk screen printing. Originality/value - The authors designed efficient microwavel synthesis for some novel iminocoumarine derivatives; The novel procedure features short-reaction time, moderate yields and simple workup; All compounds were fluorescent in 1,4-dioxane solution, and they all emitted blue light; The authors studied their

application in printing polyester and polyamide fabrics. © Emerald Group Publishing Limited.

Author Keywords
Chemical properties; Chemical reactions; Drying

Document Type: Article
Source: Scopus

Metwally, F.M.[a] , Mahdy, E.M.E.[b] , Ahmed, H.H.[c] , Abdul-Rahman, M.A.[b]
Health burden of job stress among junior resident doctors
(2015) *International Journal of Pharmaceutical and Clinical Research*, 7 (1), pp. 15-22.

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Abstract
The goal of the present study was to elucidate the impact of job stress on some biochemical indices of junior resident doctors at Ain Shams University Hospitals. Forty-eight junior resident doctors at Ain Shams University Hospitals (28 males and 20 females) in four departments (Obstetrics & Gynecology, Neurosurgery, Urology and Cardiolgy) as a case group and twenty-four non-resident doctors (11 males and 13 females) as a control group were enrolled in the current study. The choice of departments was on the bases of high job stress according to number of work hours/week. The participants ranged from 26 to 28 years of age with a mean of 27 years. Serum levels of cortisol, immunoglobulin G (IgG), highly-sensitive c-reactive protein (CRP-hs), cholesterol (Chol), triglycerides (TG), low-density lipoprotein (LDL) and high-density lipoprotein (HDL) were estimated for all participants. The results showed that serum cortisol, IgG, CRP-hs, Chol, TG, and LDL were significantly higher in junior resident doctors, while HDL was significantly lower in junior resident doctors when compared with junior non-resident doctors. The present study shed light on the health hazards of job stress due to increasing working hours among junior resident doctors © 2015, International Journal of Pharmaceutical and Clinical Research. All rights reserved.

Author Keywords
Inflammation; Job stress; Lipid profile; Resident doctors; Stress hormone

Document Type: Article
Source: Scopus

El-Mezayen, H.A.[a] , Darwish, H.[b] , Hasheim, M.[c] , El-Baz, H.A.[c] , Mohamed, M.A.[c]
Oxidant/antioxidant status and their relations to chemotherapy in non-Hodgkin's lymphoma
(2015) *International Journal of Pharmaceutical and Clinical Research*, 7 (4), pp. 269-274.

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Abstract
Objectives: Oxidative stress is one of several factors which contribute to the development of non-Hodgkin's lymphoma. The aim of the study was an assessment of the activity of oxidant/antioxidant status in patients with non-Hodgkin's lymphoma, before and one month after starting the specific cytotoxic regimen. Patients and methods: This study was conducted on 146 adult patients who were diagnosed as non- Hodgkin's lymphoma, besides 60 adult healthy persons served as controls. Their age ranged from 22 to 65 years, the protocol of chemotherapy was CHOP. All subjects gave written informed consent. Initially for both patients and control, serum MDA and SOD were measured and reported one month from starting specific cytotoxic drugs for the patient groups. Results: Before starting cytotoxic regimen, there was a highly significant rise in serum MDA concentration in patients with non-Hodgkin's lymphoma in comparison with control. After one month from starting cytotoxic regimen, there was a highly significant rise in serum MDA concentration and serum levels of SOD showed insignificant difference between NHL lymphoma patients before chemotherapy and controls, while the levels were significantly decreased in patients after one month of starting treatment compared to them before treatment and compared to controls. By comparing the period before and after starting cytotoxic regimen in patients with lymphoma, there was a significant rise in MDA and a significant reduction in SOD. Conclusion, patients with non-Hodgkin's lymphoma were under great oxidative stress during cytotoxic regimen as manifested by a rise in MDA and a reduction in SOD on comparison to those of controls, these results suggest that chemotherapy destroys the oxidant/antioxidant equilibrium in the body serum level. © 2015, International Journal of Pharmaceutical and Clinical Research. All rights reserved.

Author Keywords

Malondialdehyde; NHL. Superoxide dismutase

Makram, A.W.[a] , Khalifa, A.M.[a] , El-Wakad, M.T.[a] , El-Rewaidy, H.[b] , Fahmy, A.S.[b] , Ibrahim, E.-S.H.[c]
Evaluation of cardiac left ventricular mass from Tagged Magnetic Resonance Imaging

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Abstract
Tagged Magnetic Resonance Imaging (tMRI) is considered the gold standard for quantitative assessment of the cardiac regional function. However, quantification of the global function from tMRI is challenging due to the low contrast between myocardium and blood in these images, and hence, prevents the accurate segmentation of the myocardium. In this work, a method for enhancing the myocardium-to-blood contrast in tagged MR images is presented. First, the tag pattern in tMRI is removed by accurately suppressing the frequency components of the tag pattern to produce tagless images. Then, the image contrast is enhanced by estimating the local standard deviation and using it to suppress the blood signal intensity. The proposed method is applied on a dataset for 12 patients to calculate the global cardiac functional parameters. The results are then compared to those calculated from standard cine MRI image sequences of the same patients. The results show that the proposed method can be used to accurately estimate the left ventricular volume and mass. © 2014 IEEE.

Author Keywords
Global function estimation; Left Ventricular Segmentation; Tag removal; Tagged MRI

Motlak, M.[a] , Barakat, N.A.M.[b c] , Akhtar, M.S.[a] , Hamza, A.M.[d] , Yousef, A.[e] , Fouad, H.[f g] , Yang, O.-B.[h]
Influence of GO incorporation in TiO2 nanofibers on the electrode efficiency in dye-sensitized solar cells

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Abstract
Graphene oxide (GO)-incorporated TiO2 nanofibers was successfully synthesized via a simple and effective technique, electrospinning and applied as a working electrode for dye sensitized solar cells (DSSCs). The effects of graphene oxide on the structural and photoelectric conversion performance of the DSSCs were inspected by various analytical techniques. The results suggest that presence of graphene oxide increases the amount of dye absorption which leads to high migration of photoinduced electrons to the conduction band of the collection electrode and inhibition of electron recombination. Furthermore, the presence of graphene oxide improves the electron transport from the films to the fluorine doped tin oxide (FTO) substrates. Accordingly, remarkably enhanced power conversion efficiency of 4.52% was observed in case of utilizing 0.5 wt% graphene oxide-incorporated TiO2 nanofibers as working electrode based DSSC which is higher than that of the conversion efficiency in case of pristine TiO2 nanofibers (i.e. 1.54%). The high amount of graphene oxide content results in decrease the power conversion efficiency. Therefore, it can be claimed that graphene oxide-incorporated TiO2 nanofibers as working electrode is a promising candidate for improving the performance of the DSSCs. © 2014 Elsevier Ltd and Techna Group S.r.l. All rights reserved.

Author Keywords
Conversion Efficiency; Dye sensitized solar cells; Electrospinning; GO-incorporated TiO2 nanofibers

Document Type: Article
Source: Scopus